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CERTAIN ASPECTS OF NATURAL AND ACQUIRED RESISTANCE TO TUBERCULOSIS

AND THEIR BEARING ON PREVENTIVE MEASURES *

THEOBALD SMITH, M.D.

PRINCETON, N. J.

In choosing so shopworn a subject as tuberculosis, I have before me the fact that the progress of scientific theory and practice is dependent less on rapidity than on direction of movement; less on the quantitative accumulation of information than on the proper interpretation and correlation of what is actually in hand. Of the information which has been brought together concerning tuberculosis, much is contradictory; much lacks coordination with other data; not a little has been the product of commercial stimulus. The task before the lecturer is best fulfilled by indicating existing gaps, rectifying misinterpretations, pointing out the inadequate support given by science to many accepted doctrines, rather than by rehearsing what is either well known or accessible in the literature of the subject.

In dealing with so intricate a theme, on which so much has been written and which has been approached experimentally and clinically from so many different angles, I have thought it best to treat the tubercle bacillus biologically, that is, as a living entity with a complex, adaptive organization, and to follow it step by step in its movements through the body.

Before taking up the details of this journey, permit me to refer briefly to the parasitic cycle which I have discussed elsewhere at length and which will form the subject of a forthcoming publication.

THE PARASITE CYCLE

The peculiar, complex life of a parasite of higher animals imposes on it certain definite restrictions, and compels it to move along certain definite routes. Thus each infectious agent must enter the body cavities or the body tissues. It must multiply therein to secure a numerous progeny, which must successfully escape from its host and, lastly, find its way to another host. This complex cycle, comprising four distinct stages, each very different from the others, demands of the parasite the capacity for adapting itself to some portal of entry, and of protecting itself from the antiforeign activities of the host tissues while it produces a progeny to meet the exigencies of the trip to another host. It must have adapted itself to some portal of exit and to some active or passive carrier to another host. These various demands are most thoroughly met by the highly developed protozoan and metazoan parasites. Certain highly specialized bacteria must have developed equally marked capacities for meeting these demands, but they are not so much in evidence, since the minute size of bacteria does not permit us to recognize those morphologic structures which go with functional adaptations to the different phases of the cycle. We must for the time being content ourselves with determining through immunologic reactions the changes undergone by bacteria in their different stages through the body.

Fitting the tubercle bacillus to the various stages of this cycle, we may perhaps obtain a view of its activities at an angle somewhat different from that from which bacteria are usually viewed. We have been in the habit of regarding the pathogenic bacteria as known, fixed quantities and the animal body as the adaptive, variable element. By applying what is known of pathogenic bacteria to the stages of the cycle, we shall see that parasites, including bacteria, must change their behavior from step to step to meet the host conditions at entry and exit and in the active tissues, and that these modifications are due to definitely fixed, highly developed functions of the parasites. The fact that such parasites have survived through eons of time, that they may have survived the original hosts and migrated through a series of such hosts to man and our domestic animals is a sufficient proof that their capacity for adaptation was adequate and that the organisms capable of such prolonged existence are not so simple as we have been inclined to believe.

Beginning with the entry of tubercle bacilli into the body, we are at once confronted by the problem of immunity. The condition in which tubercle bacilli leave the patient is of prime importance to the succeeding infection. This question I must leave, however, until farther on. I would simply make the statement here that the bacilli must have been influenced in some way by the developing resistance of the host from which they came.

THE PRIMARY LESION

The old controversy concerning the production of primary lesions at the portal of entry has not yet been settled and is not likely to be very soon, for no fast and sharp distinctions are possible. Whether an inhaled bacillus will cause lesions in the lung tissue where it is deposited or be carried directly in the lymph current to the associated lymph nodes will depend on the character of the tubercle bacillus, the form in which it entered the air tubes, that is, dried or in droplets of sputum, the age of the person, the condition of the lungs as regards the lymph current, localized pressure on the lungs by the ribs, and so on.

* Second Mellon Lecture, delivered before the Society for Biological Research, University of Pittsburgh, May 17, 1916.

* The length of this article requires that it be published in two parts. The second section will appear next week.

To these must be added the degree of natural resistance of the individual, any preceding tuberculous infection furnishing some specific resistance, and the existence of abnormal processes in the air tubes and lungs. Baumgarten, Weigert and, of recent writers, von Pirquet are inclined to the view that tubercle bacilli always produce lesions at the portal of entry.

In addition to the human material on which this question has hinged, a more homogeneous material to study this problem is presented by the independent bovine disease. More than twenty years ago, after a careful study of necropsies on many animals in early stages of tuberculosis, I pointed out the predilection of the invading tubercle bacilli for the lymph nodes. Infection of the upper respiratory tract was revealed, rarely by tuberculosis of tonsils or other superficial structures, but chiefly by disease of the associated lymph nodes. Similarly, inhaled bacilli multiplied in dorsal mediastinal and bronchial lymph nodes according to the lobe of the lung in which the bacilli alighted and through which they were transported. Disease of the lungs, however, was not uncommon. Tuberculosis of the intestinal mucosa was very rare, even when bacilli were being discharged from the lungs. The mesenteric lymph nodes were the primary seat of multiplication.

Furthermore, after generalization of the disease had taken place, there was still a predilection shown for the lymph nodes. Bacilli passing into the liver would leave no macroscopic effects, but would cause extensive disease of the portal lymph nodes. Similarly, the infection passing into the kidney would leave as the only sign of its presence tuberculous renal lymph nodes. It will be of interest to quote certain statistics obtained by careful necropsies of apparently healthy cattle which gave positive tuberculin reactions.

In a herd of sixty head, fifty-three were found with lesions, some very slight. Of these fifty-three, twenty-seven were without visible lung lesions, but with thoracic lymph nodes involved. Only one had lung lesions without associated lymph node infection.

In another herd of thirty-four infected animals there were eleven with thoracic nodes involved, but without lung lesions. There were none with lung disease and without disease of the associated lymph nodes.

Of ninety-one head of tuberculous cattle, twenty-five had the thoracic lymph nodes and not the lungs diseased.

Similar figures could be quoted with regard to the involvement of neck and mesenteric lymph nodes without corresponding lesions of mucous membranes. That bacilli had passed through the udder was shown in enlarged and caseous pubic lymph nodes even when no macroscopic lesions of the udder tissue were in evidence.

As stated at the outset, settling down and multiplication of tubercle bacilli may depend on a number of diverse mechanical, pathologic and immunologic factors. A satisfactory clearing up of the question involved is not possible at present, and I shall delay only to call attention to two divergent interpretations:

1. The tubercle bacilli inhaled are probably picked up in the alveoli by phagocytic cells (so-called *Staubzellen*) and carried into the regional lymph nodes as foreign particles, or they may be carried in the lymph as free particles to the same destination. The primary tubercles in the lymph nodes develop in or near the dust or pigment laden zone of the nodes as a result of the multiplication of the bacilli.

2. The tubercle bacilli may multiply and produce only microscopic lesions at or near the portals of entry, as, for example, in the lymphoid tissue of the lung itself. Thence bacilli may be transported to the regional lymph nodes after caseation of the primary focus, and produce macroscopic lesions.

If the second view is accepted, it becomes necessary to explain why such lesions remain so small as to be unnoticed and why the lesions in the lymph nodes become large, knowing as we do that lung tissue is not resistant, but rather the reverse, and that sooner or later in the course of tuberculosis the lungs become involved.

THE INFECTION OF LYMPH NODES

The same problem is presented to us in the infection of mesenteric lymph nodes. Are the bacilli transported directly to them from the intestinal contents, or is there multiplication in some lymph follicle of the mucous membrane? Here also it would become necessary to explain why such microscopic lesions do not continue to enlarge and become visible later on.

Primary lymph node disease occurs quite generally in the young of both man and cattle. The interpretation which I have given heretofore and which still appears valid is that such localizations, subject to the conditions noted above, are a sign of the absence or lack of tissue response to invasion at the point of entry or on the way to the lymph nodes. This response comes later on, either as the result of earlier infection or of a heightened general resistance. It is now called sensitization; but sensitization may be simply an accompanying phenomenon.

The passage of tubercle bacilli through membranes to the regional lymph nodes without leaving any traces of their passage has led certain writers to utilize this phenomenon in their endeavor to prove that pulmonary tuberculosis may be and frequently is of intestinal origin. No one will deny that this is possible, but that it occurs often or regularly is highly improbable. Bacilli which enter the portal circulation directly from the intestines may escape through the liver into the lungs, as occurred in a case of tuberculosis in a fetal calf found by me some years ago. The lymph nodes of liver, kidney and lungs were affected, but not the organs themselves. Such bacilli must run the gantlet of the very efficient liver filter. On the whole, the intestinal origin of pulmonary tuberculosis remains to be demonstrated.

The predilection of tubercle bacilli for lymph nodes, and the occurrence of the earliest lesions there as a result of multiplication is apparently not in harmony with Bartel's theory that lymph nodes are protective, or with Murphy's results, which point to lymphoid cells as inhibitory agents. The conflict, however, may be only apparent, depending on the interpretation. I venture to suggest one such harmonizing interpretation which must, however, await demonstration. This interpretation involves the well known fact that organs and tissues of the same host differ in their behavior toward the same infecting agent. In the case of tuberculosis, the lymph nodes are the first organs to engage the tubercle bacillus. It seems as if they contained some factor absent in the tissues passed through by the invading bacilli. This factor, though apparently unsuccessful in suppressing multiplication, makes a beginning in this direction, whereas the tissues through which the bacillus passes are not yet prepared to do so.

The lymph node disease is only a preliminary stage of the infection. It is like a shot that missed its goal. The process sooner or later comes to a stop, and the usual well known degenerative changes go on. If all cases ended this way, tuberculosis would soon die out. The bacilli must reach some organ or tissue whence they can be shed outward. This occurs when the bacilli multiply in the tissues of the lungs, intestines, liver, kidney and bladder, uterus and tubes, testicles and skin. All these forms of tuberculosis occur, but the predominant type is pulmonary tuberculosis. The bacilli after inhalation settle down, and after multiplication and destruction of lung tissue pass out again. This is the type of disease which has been evolved into a fairly well balanced parasitism.

The bacilli which have been, as it were, marooned in the lymph nodes, in order to gain their final habitat in the body must in some way break away from the lymph nodes and eventually reach the lungs. That this goes on regularly is at present the popular theory, advocated originally by von Behring, and championed by Römer, Much and others. According to them, the infection gained in infancy or childhood reaches the lungs during adolescence or later. There is no denying that this may occur, but there is another possibility not to be lost sight of, and that is reinfection from without, to which I shall return later.

The shedding of the bacilli from the lungs completes the cycle of the bacillus. This cycle tends to fix suitable races and eliminate others. Strains too virulent, which are fatal before lung tissue breaks down, naturally disappear. Those which are of such slight virulence that they remain buried in the lymph nodes also disappear. Only those in between these extremes are likely to be passed on from case to case, thus giving the form of the disease and the virulence a certain stability.

TYPES OF BACILLI

These are the chief biologic facts which underlie the epidemiology. On them is based the development of races of tubercle bacilli. Research has brought to light the fact that there are three distinguishable types of the tubercle bacillus with characters sufficiently fixed to have resisted thus far experimental transformation. These types resemble one another so closely that Koch himself did not in his early monograph regard them as distinct. The extensive studies on variation among bacteria now before us make it probable that there was a common ancestor from which the human, bovine and avian types have sprung through adaptation to special hosts. Another possibility is that these types are plastic habitat varieties, and under certain conditions transformed, one into the other. Many experiments extending over long periods of time have failed to change, for example, the human into the bovine type. Where such transformation has been claimed, the accidental coexistence of the two types in the same subject has not been clearly disproved. There is, however, still room for further experiments, for the subject is of great importance. Though it may have little significance in the daily give and take of infection, transformation, if it goes on, may be a way of reintroducing infection into a purified community of man or animals.

Other races of tubercle bacilli may in time be produced. Thus, in swine the bovine bacillus produces a relatively rapid, generalized disease. Should swine discharge such bacilli and infect other swine and these again fresh subjects, the bovine bacillus thus transmitted from pig to pig might eventually be more or less modified and become a recognizable porcine type. A similar change might take place in those aberrant types which attack monkeys. The establishment of such new types might require long periods of time combined with specially favoring cooperating conditions.

The bearing of such races on the public health must be determined for each in particular. Host relationships of parasites and of infectious agents cannot be predicted. They depend on conditions beyond our present knowledge. These often bind together hosts standing far apart zoologically. Thus the mouse septicemia bacillus, although virulent for mice, is not so for guinea-pigs, but is highly virulent for pigeons. Of birds, the parrot is thus far the only species susceptible to the human type of tubercle bacillus.

In the past twenty years the bovine tubercle bacillus has absorbed much of our attention because the human being is to a certain degree susceptible to it. It tends to produce lymph node disease in the neck and the mesentery. Occasionally generalization results in fatal miliary tuberculosis or in meningeal localization. In general it may be said that this type of tuberculosis is a food disease, and can be stamped out by adequate and relatively simple measures. It does not concern epidemiology, for it does not pass from man to man because of lack of opportunity. In only five out of approximately 800 cases of the pulmonary disease studied was the bovine bacillus found. The entire question of bovine tuberculosis in man should be dealt with apart from the great problem of the genuine human disease.

Concerning the races of the tubercle bacillus with reference to their effect on various hosts, it may be said in general that toward the species to which they are adapted they produce at the start a purely localized disease, in which further progress depends on a variety of contributory agents. Toward species to which they are not specifically adapted their behavior varies. The bovine type is quite regularly more virulent toward other host species than toward cattle. It is also more virulent than the human type toward alien hosts. To this general rule the human subject is an exception, for many cases of cervical lymph node tuberculosis due to bovine bacilli are either stationary or very slowly progressive. The avian bacillus acts very differently from the other two types in that its virulence for mammals generally, including man, is a negligible quantity.

Returning to the human disease, we may accept as the type disease in civilized countries that form of tuberculosis known as phthisis, in which the infecting agent enters and leaves by the same route, which is also the shortest and safest route, and considered as aberrations and deviations all other forms of the disease. By thus standardizing the disease we are put into a position to study more systematically and to evaluate these aberrations and deviations which occur either at the start or later.

HUMAN TUBERCULOSIS

This deviation from the type is the primary lymph node disease. The infection for the time being is locked up. A deviation subsequently from the type is the spreading of the disease by contiguity, by aspiration, by progression along lymph routes, and by invasion of the blood and hence of various organs and tissues. We may here digress a moment to discuss the analogies of the primary focus with that of other

more acute infections. A localized primary seat of multiplication of virus is usually not regarded as indicating actual disease until there is evidence that the virus has become disseminated to form new foci. The line to be drawn in practice between these two states is as a matter of course vague, because one state may follow another rapidly. It is well, however, to maintain the theoretical distinction. In tuberculosis the primary focus may not be overstepped; the infection may come to an end there by hygienic treatment, or else there may be a long interval between the development of the primary focus and further dissemination. It would be well if we regarded the primary focus as an infection and the actual disease as begun only when new foci appear.

A theoretical distinction between infection and actual disease opens before us the question as to how often in other infectious diseases a primary focus is developed and checked without being recognized. We are in the habit of assuming that when clinical evidences of disease are absent, no multiplication has taken place. In this, however, we may be in error. Whatever multiplication takes place may be simply below the threshold accuracy of our detecting methods. This distinction between infection and disease will also help to classify those many cases of primary healed or stationary tuberculosis discovered at necropsy. While they are in a sense evidence of the ubiquity of tubercle bacilli, they are hardly to be classed as cases of tuberculosis.

The difference between tuberculosis and more acute infectious diseases may be expressed in a general way by the statement that in tuberculosis the various steps of the disease are drawn out, segregated as it were, and therefore accentuated and made conspicuous. This accounts for the emphasis laid on the primary focus, which stands out distinctly as it is the only expression of the disease for a time. In the acute infections the primary focus is either concealed or else merged with the generalized stage.

TYPE OF DISEASE

Returning to the theme, we may consider further the deviations from the current type of tuberculosis. One of the most important factors in such deviations is dosage of virus. In all experimental infections on animals the dosage is of great influence in determining the course of the disease. Large doses may lead to multiple primary foci. I have seen in cattle primary lymph node tuberculosis of the throat, the thorax and the mesentery, all in the same stage, and to all appearances a result of some one dose of virus. The significance of the size of the infecting dose is now so generally understood that I need not delay here.

The type of disease is further modified by variations in virulence and other characters of tubercle bacilli. That individualized strains exist is known to all students of tuberculosis. Special features of such strains remain conspicuous during years of artificial cultivation. Unfortunately, very little has yet been done in studying systematically the relation between severity and acuteness of tuberculosis and the character of the infecting strains.

The type of disease is further influenced by racial characters of the host, and by individual characters, such as rib pressure, lung ventilation, etc. Certain industries, such as coal mining, have been regarded as in a sense protective. Here again a study of the influence of various kinds of dust should enter. The training and activity of dust cells and other phagocytes by some relatively harmless kind of dust may play some part in the prompt reaction to invading tubercle bacilli.

The type is furthermore influenced by intercurrent diseases, such as measles, pneumonia and whooping cough. Here we must decide between the behavior of normal and acquired resisting forces, the so-called antibodies, and the influence of mere inflammatory and congestive processes in spreading a localized infection.

Finally, severe physical exertion may play a very important part in the dissemination of the virus. Parturition is known to be such a factor. Similarly in cattle, parturition is frequently followed by generalization of a local tuberculosis and speedy decline and death.

The influence of an untoward environment in general has been frequently cited as an aggravating factor. Confinement in dark, damp, ill ventilated rooms, depression of vital activity due to want of suitable food and too low temperature are causes which impress us as adequate and which need some more detailed analytic studies.

RELATION BETWEEN THE TUBERCLE BACILLUS AND THE TISSUES OF THE HOST

We now come to the chief problem of tuberculosis, the behavior of tubercle bacilli within the body. This behavior is governed by the limitations imposed on both host and parasite by the exigencies of the parasitic cycle already referred to. These limitations we may overstep in our experiments to obtain underlying principles. We have not only the natural diseases of human, bovine and avian tuberculosis to study, in which a certain unstable equilibrium between parasite and host has been established by nature, but we may produce experimentally disease by inoculation in host species in which the parasite is always in the ascendency and invariably destroys the host. We may also study the behavior of tubercle bacilli in those animals in which the host invariably predominates and promptly checks the bacilli. In the host of limited susceptibility, bacilli must multiply to supply a numerous progeny for dissemination and yet spare the host for a period at least. What are the conditions favoring and opposing such multiplication? The play between host and parasite is evidently very complex.

Histologic studies show that in tuberculosis of man and animals the tubercle bacilli are encountered within cells of a certain type, known as epithelioid and derived probably from cells of endothelial origin. By using trypan blue as a vital stain, Evans, Bowman and Winternitz have recently endeavored to elucidate more definitely the source of the cells entering into the reaction. They limited their studies to the liver following the injection of the dye and of tubercle bacilli into a radicle of a mesenteric vein. They found that the so-called Kupffer cell forms the center or giant cell of the tubercle.

In man and most animals, the lesions resulting from spontaneous and induced tuberculosis are focal and form the so-called tubercle. In white mice, inoculation of avian bacilli leads to active multiplication within endothelial cells until the latter are filled with bacilli. The infection creeps from place to place by way of blood and lymph stream. Tubercles are not formed.

The conditions operative when tubercle bacilli multiply rapidly or slowly or when they are suppressed and destroyed may reside within the endothelial phago-

cytes or in the blood and lymph or in both. Researches have not yet thrown any light on this phase. Opie has described the presence of lymphoprotease or leukoprotease or both enzymes in case both kinds of cells are present which give rise to these enzymes.

A prominent earmark of tuberculous tissue is its degradation sooner or later into a peculiar cheesy mass. Caseation has been referred by some to the structure of the tubercle, which, being without a vascular supply, is destined to become necrotic centrally sooner or later. Others have referred the process to the active toxins of tubercle bacilli. It is probable that there are two kinds of necrosis, one due to nutritive disturbances, the other to direct activity of rapidly multiplying tubercle bacilli. Jobling and Petersen find one of the causes of caseation in the tubercle bacilli. The unsaturated fatty acid soaps present act antitryptically and against leukoprotease and thus lead to caseation.

The interpretation of what goes on in tuberculous foci which leads to such diverse sequels as sclerosis, caseation, or continuous extension of the process will depend on the cooperation of immunologic, histologic and biochemical researches on the spontaneous and induced disease of a variety of differently reacting animals. We know definitely that caseation or calcification does not mean the destruction of all tubercle bacilli, for the latter are always discharged after caseation. They and the disease depend for their continued existence on this process of disintegration. Otherwise an escape to another host could not take place. In general, the tubercle is analogous to the abscess. Both processes tend to circumscribe, confine and discharge the micro-organisms outward. Neither pus nor caseous matter is in general free from the specific bacteria which gave rise to it.

Besides the proliferative tendencies of tubercle bacilli leading to the characteristic tubercle and to the more diffuse accumulation of endothelial cells, inflammatory reactions may be produced, especially when large numbers of tubercle bacilli of relatively feeble virulence are injected into animals. In the case of a human type bacillus injected intravenously into calves, I observed a pneumonic condition due to extreme congestion, the presence of masses of fibrin in alveoli, desquamation of alveolar cells, and in some cases an abundance of polymorphonuclear leukocytes. The long standing controversy concerning the proliferative and the exudative tendencies of tubercle bacilli may be harmonized by pointing to variation in the numbers and virulence of tubercle bacilli and, in experimental work, to the presence of attenuated, weakened and dead bacilli in our cultures injected into animals.

The secretory and excretory products resulting from the metabolic activity of tubercle bacilli and the various substances making up their bodies are sufficiently diverse to account for various reactions on the part of host tissues. We have now reached a stage at which the significance of diverse tissue reactions should be the object of investigation rather than of controversy. Without a thorough interpretation of tissue reactions, the serologic reactions may not be properly understood.

THE TUBERCLE

Of the various products of reaction associated with the presence of tubercle bacilli, the tubercle is the most frequently encountered. It suggests the result of activities which on the part of the host confine the spread and check the multiplication of the bacillus, and which on the part of the parasite tend, in the caseation and liquefaction of tissues, to furnish a temporary protection, a vehicle and an exit for the bacilli. The tubercle, owing to its predominance in the mammalian host, may well be regarded as the typical reaction, and all histologic expressions differing from this should be utilized for illuminating, if possible, the typical reaction. In this reaction we note that endothelial-like cells are primarily involved and that polymorphonuclear leukocytes do not appear.

The influence of a humoral factor antedating the formation of the tubercle cannot be predicted. This would naturally depend on the rapidity with which the bacilli are taken into the phagocytic cells, in other words, the time of exposure to destructive bodies in the blood and lymph. Rous has shown experimentally that leukocytes may protect engulfed objects from antibody activities. The extent to which protozoa may use host cells into which they enter actively or are taken in passively had made this interpretation a logical one. Phagocytosis, like any other reaction, may represent in some diseases one as yet unadapted to the self-protective interests of the host. In any case it is necessary to bear in mind that the taking in of parasitic organisms, such as bacteria by the host cells, may lead (*a*) to prompt destruction of the bacteria, (*b*) to a limited multiplication compatible with cell life of the host for a time, or (c) to rapid multiplication of the parasite and destruction of the host cell, resulting in liberation and migration of the parasite to other cells. In any disease associated with passive intracellular sojourn of the parasitic agent, the exact function of the phagocytic cell needs elucidation before we can be sure of the humoral factors. Or perhaps the reverse may be indicated. By measuring the resisting and destructive factors in the fluids of blood and lymph, we may be able to measure with greater promise of success the precise significance of phagocytic processes. The controversies between the adherents of humoral and those of cellular protective mechanisms, as represented, broadly speaking, by the schools headed, respectively, by von Behring and Metchnikoff, which stimulated so much special research for several decades, have done much to define the problems. But by neglecting to restrict their theories and inferences to the micro-organisms actually used in their studies, investigators of that period left the more profound study of specific infections and parasitic diseases open. The marvelous work of the period mentioned will be seen in its true light when it has been sifted and reapplied.

ANTIBODIES

A study of those factors resident in the blood of normal, tuberculous and vaccinated individuals has not as yet developed more than possibly diagnostic uses. To what extent the so-called antibodies may be concerned in active immunity cannot be answered at present. Möllers in 1912 summed up the situation as follows:

Agglutinins and precipitins are inconstant in spontaneous tuberculosis, but they appear in the experimental disease. Opsonins are either slightly reduced or fluctuating. Complement-fixing bodies appear after the injection of living and dead bacilli. The blood of nontuberculous individuals does not contain them, but they have been found in tuberous leprosy. These complement-fixing bodies are encountered in from 6 to 8 per cent. of tuberculous individuals. They may be

developed toward various preparations of the bodies of bacilli and only against the one employed.

How these normal and immune antibodies cooperate with or are utilized by phagocytic processes has not been made clear, as shown in the case of opsonins. Here the examination of the blood in vitro indicates that opsonins stimulate polymorphonuclear leukocytes to take up tubercle bacilli. Since the polymorphonuclear leukocytes do not play any recognizable part in the tuberculous process, it is difficult to understand the significance of the opsonic phenomenon. Tests are usually made with bacilli well saprophytized or else ground and suspended. Substances may thereby be set free which react very differently from the intact bacilli, which pass from case to case and which run the gantlet of the immune reactions of a well developed case of disease. Those cases in which polymorphonuclear leukocytes appear in the lesions at some time in the course of the tissue changes should be carefully studied. Unless, however, cultures have been made to determine the presence or absence of pus producers, mere histologic examination is of no avail. But even after cultures have been made, there still remains the residual possibility that uncultivable, ultramicroscopic, secondary invaders have been on hand. Since the polymorphonuclear cell reactions occur chiefly with lesions associated closely with the exterior, such as tuberculosis of the lungs, the genito-urinary tract and the subcutis, the inference that other microorganisms are the chemotactic agents cannot be denied offhand. For such investigations the experimental animals, especially the larger, more resistant animals in which the disease runs a course similar to that of the human disease, are best adapted, since they can be destroyed at any stage and terminal infections largely anticipated.

RELATION OF LYMPHOID TISSUE

The relation of lymphoid tissue to tuberculosis was briefly mentioned above, but it deserves more consideration. The structure of the tubercle is not only the same in the various organs of the same host, but it is practically the same, with only minor variations, in all mammalian species inoculated with bovine or human types. The avian type is an exception so far as it frequently fails to induce tubercle formation, although the cells involved are of the same type. When lymphoid cells are present, what is their significance? Mantles of lymphocytes are not infrequently found enveloping epithelioid cell groups, but such a combination may be due to the evolution of a tubercle in lymphoid tissue with the proliferation of endothelial elements centrally and the crowding back of the lymphoid cells toward the periphery. This is the usual picture in the early stages of tuberculosis of the lymph nodes. J. B. Murphy and A. W. M. Ellis exposed mice inoculated with bovine bacilli to the Roentgen ray and found that such exposure increased susceptibility. The authors infer therefrom that lymphocytes are important agents in the defensive mechanism against tuberculosis. On the other hand, P. A. Lewis found that in mice, splenectomy increased very materially the survival period after a given dose of bovine tubercle bacilli.

In some investigations on bovovaccination, I reported some years ago as a by-product peculiar lesions associated with the presence of animal parasites in cattle which had received intravenous doses of tubercle bacilli of the human type. Although no macroscopic lesions resulted from such injections in otherwise normal animals, the presence of animal parasites in the tissues seemed to alter the local equilibrium. Filariae probably embedded below the epithelium of the omentum became enveloped in a zone of lymphoid cells, in which were observed occasional foreign-body cells; but nothing characteristic of the tissue reaction of tuberculosis was detected. The type of parasite did not determine the reaction, for an entirely different microscopic form in the lung tissue gave rise to a lymphoma from 4 to 5 mm. in diameter. Ordinarily no such reaction follows the localization of filariae in cattle, nor do we find tumors developing about accidental parasites in the lungs, probably aspirated during the taking of fluids. A tentative explanation of the peculiar cell reaction may be given if only to stimulate the attention of others to such accidental by-products of experiments. The presence of the parasite in some way reduces the resistance of the tissues in its immediate environment, so that the human bacillus can multiply to a limited extent. The reaction to this multiplication is of such a character as to lead to the lymphoid-like tissue described rather than to the usual endothelial cell accumulation. The newly proliferated tissue in turn destroys the life of the animal parasite around which it forms. This event would probably in time be followed by another type of cell reaction, the foreign body giant cell (of which a beginning had already been made in the cases described) as soon as the parasite begins to disintegrate.

I recently described the predominance of lymphoid cells in certain types of experimental tuberculosis. The relative resistance of calves to the bovine type of bacilli was raised by two preceding injections of human bacilli. The final intravenous injection of the bovine type led to a peculiarly modified tissue reaction. The special feature of this reaction to interest us here is the great predominance of lymphoid cells, and the relative rarity of epithelioid and giant cells. This occurred not only in the lungs, but also in the udder. Both this group of cases and those relating to the combination of parasite and tubercle bacilli described above suggest that the bacilli undergo a preliminary modification in the fluids of the tissues, owing to humoral factors, and that the modified cell reaction is a response to a modified stimulus resulting from the humoral treatment. That the cell reaction of the untreated but parasitized cattle to the human type should be the same as the reaction of partially immunized cattle to the bovine type is noteworthy.

Finally, there should be mentioned here certain experiments of E. L. Opie on induced tuberculosis of the dog. Opie treated induced tuberculosis of the pleura in dogs with leukocytes obtained also from dogs following the injection of turpentine into the pleural cavity. The disease was favorably influenced by these intrapleural injections, especially when the injected leukocytes were in direct contact with the tuberculous tissue. In some cases complete restoration of the pleura took place. The cells injected consisted of polymorphonuclear and mononuclear cells in about equal numbers. The evidence pointed to the inference that only living leukocytes can accomplish the results observed.

(To be continued)

Contributing Causes.—Unemployment, overwork, congestion of population, child labor, and the hundred economic causes which increase the stress of living for the poor are often contributing factors in the production of mental diseases.—Rosenau.

URETER CATHETER DRAINAGE IN THE TREATMENT OF RENAL INFECTIONS

WITH SPECIAL REFERENCE TO THE INFECTED HYDRONEPHROSIS COMPLICATING PREGNANCY *

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Modern urology owes its progress and substantial development in a great measure to conservatism, through which crude and often radical measures have been supplanted by scientific and accurate methods. This has been contributed to chiefly by the cystoscope and its accessories, preeminent among which stands the ureter catheter. It is perfectly safe to say that the ureter catheter has afforded us more real information than any other urologic instrument. Its use as a diagnostic aid is thoroughly known and appreciated by practically every one, and needs but little comment. There are a few, and there should be a very few, who still believe that ureter catheterization is a major procedure, attended with a great deal of traumatism and shock. I am unable to understand why this idea still prevails, for the procedure itself is certainly simple and attended with very little pain, seldom more than accompanies any instrumentation, and rarely necessitating a local anesthetic.

As a therapeutic agent it has served a gradually broadened field of usefulness. Since its first employment by Bozemann in 1888, and a little later by Pawlick and Kelly for lavage of the renal pelvis, it has displaced many radical surgical procedures which have been applied to numerous renal and ureteral diseases, of which may be mentioned certain hematurias, closure of renal and ureteral fistulas, removal of ureteral calculi, dilatation of ureteral strictures, relief of anuria, and finally the treatment of various types of renal inflammations. I do not intend to discuss its application to all of these conditions, but will confine myself in this paper entirely to its use in certain types of renal infection. Neither do I intend to enter into a discussion of the treatment of the ordinary forms of chronic pyelitis and pyelonephritis, as such treatment is so universally employed that it is thoroughly understood and appreciated. I shall discuss its value as a means of conservative surgical drainage for infected renal retentions, first, as a method of preparation; second, as a method of conservation, and third, as a method of cure, dependent on the extent and character of the disease and of the associated phenomena. Naturally such renal retentions as are consequent on definite pathologic obstruction within or without the urinary tract, such as ureteral stone, ureteral stricture, prostatic enlargements or extraneous tumors, will be relieved by the correction of such primary causes. There are, nevertheless, two classes of renal retentions which are of particular interest and demand prompt relief: first, those of obscure etiology, in which no tangible pathologic foundation can be ascertained, such as aberrant blood vessels, etc., and second, those secondary to physiologic obstruction, namely, the pregnant uterus, in which it is desirable if possible to preserve the cause of the obstruction. I shall not discuss the many phases of the pathology of renal infection, but will consider only the retentive type with the variations in the pelvis which seem to have a definite bearing on the curability of the disease by means of conservative measures. The normal pelvis is practically empty, the urine presses on by peristalsis from the papillae down the ureter, and pelvic residual urine is of pathologic significance. Should the residual urine in the renal pelvis become infected, the chance of cure will be dependent largely on its character and extent, also on the changes in the pelvic wall, and certainly in the kidney itself.

The three grades of renal retention which Perineau has described seem very pertinent, namely, the first, second and third degree, dependent on the amount of distention and destruction of the elastic tissue and muscle fibers of the renal pelvis, and of the accompanying kidney damage.

In the first stage, the retention is small, the contents are under great pressure, the fibers are under tension, but have not lost their tone, the catheter inserted into the pelvis brings forth urine in a jet, and renal function is little, if at all disturbed.

In the second type there is a more pronounced dilatation, and the muscle fibers are more weakened and feeble, but are still capable of returning to normal function if relieved of the strain of intrapelvic pressure. A catheter inserted into such a pelvis gets urine in drops, influenced by pressure on the kidney, the ordinary hydronephrotic drop; renal function is impaired.

In the third degree the kidney is encroached on materially, pelvic fibers are overstretched, incapable of returning to their normal; renal function is greatly impaired or destroyed.

In the first type of retention the patient has an excellent chance of cure. It has been our experience that one or two catheterizations with relief of the retention will suffice to clear up this type. On inserting the catheter, cloudy urine escapes, becoming more cloudy as it gets to the sediment. Following relief of retention there occurs a normal intermittent secretion of clear urine, usually in a very short period.

The second group of cases, in which the retention is much more pronounced, and the kidney function impaired, is often a very deceptive one, and unless one is careful a false impression may be gained of the extent of the pathologic condition, and it pays to be conservative as to our prognosis and plan of therapy. Often these patients are quite sick, with fever, chills, tenderness and mass in the kidney region, the urine is dirty with pus and bacteria, and the cystoscope may show a thick inspissated pus plug oozing from the ureteral orifice on the corresponding side. Such a picture suggests a large pyonephrosis. On inserting the catheter into the kidney and cleaning out the plug from the ureter, there is usually a large amount of milky, pale urine. The function of this kidney will be practically nil. We have seen a number of such cases in which the phenolsulphonephthalein would be hardly readable within a half hour after it had appeared following an intravenous injection. Such a picture would apparently indicate that the kidney was practically destroyed, but on drainage of such kidneys by means of the ureter catheter, leaving the catheter in place for several days, and in some instances by intermittent catheterization, they may assume fairly normal function. Such kidneys in which there has been a definite

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pyelonephritis are prone to recrudescences. The urine in these cases has in several instances become clear, and culturally negative. An occasional pus cell, however, is a common finding. This is the type which Rafen calls aseptics and not cures. I feel that if we can rid these kidneys of infection we have accomplished our aim, whether they are functionally disturbed or not.

Often some of the large retentions after drainage will completely empty themselves when the musculature of the pelvis has regained its tone. This group of cases is the group in particular in which great care has to be exercised in our surgical procedure. Many such patients are nephrotomized when they are acutely sick, and I believe that many could be spared and have a much better chance by drainage with the catheter. Should they be extreme and bordering into Group 3, and not be curable, they can be so improved as to make them far better surgical risks, excepting of course the large pyonephroses, which will not drain through a catheter.

Group 3, infected renal retentions in which there is an irreparable damage to the kidney, where functional tests following catheter drainage have proved the kidney to be functionally valueless and a constitutional menace, there is ultimately only one hope of recovery to the patient, and that is removal of the kidney, as in any incurable renal infection, provided the other kidney is sound; but such patients can be materially improved by drainage of the kidney by means of a retained catheter, leaving it in several days at a time, removing it for several hours, and reinserting, etc., in such manner relieving their absorption and toxemia, relieving the sound kidney of toxic nephritis, allowing many of them to get over a low grade uremia, and make them safe surgical risks, to be operated on at election rather than as an emergency.

Several cases have made a great impression with respect to the effect of drainage. The patients had very large retentions, marked pyelonephritis, accompanied by chills and high fever, and in very septic conditions, very dirty urines; after ureter catheter drainage and relief of their back pressure and absorption, they immediately ceased having their chills and fever, even though the urine was just as dirty as it had previously been.

When ureter catheter drainage is necessary over a lengthened period, we have found that usually the patients tolerate the catheter nicely, so that it has been perfectly easily borne for several days at a time, and the catheter in most instances has remained in place. We, as a rule, allow it to remain about three days, giving daily instillations of argyrol, 25 per cent., and silver nitrate, small amounts. It is then removed and allowed to remain out several hours and reinserted. This may be kept up for several weeks.

In Class 2 we watch very carefully from time to time the character of the urine and the amount of retention in the renal pelvis, and follow the patients' condition very closely. As previously mentioned, it is surprising how quickly the musculature regains its tone, and the pelvis completely empties itself if the retention is relieved, and how satisfactorily the patients improve.

Renal retention is an exceedingly common accompaniment of pregnancy, particularly in primiparas. This retention may be unilateral or bilateral, affecting the right side in about 85 per cent. of the cases if unilateral, as has been shown by Olshasen and Halberthsma. It is due to anatomic reasons which are well known to all, namely, that the uterus during pregnancy is obliquely placed in the abdominal cavity with the fundus inclined to the right and rotated around its long axis so that the left border looks to the left and forward, the right border to the right and backward, thereby bringing the right border in close contact with the posterior part of the pelvic brim. Obstruction is more common in the fifth and sixth months of pregnancy, because at this time the largest diameter of the uterus is occupying the superior strait and at this level the ureter is less protected by soft parts than anywhere else in its course. Thus we have a potent factor in the production of renal infection, and it is highly desirable that the cause of the retention predisposing to the infection should remain undisturbed. Therefore, with this marked frequency of right sided renal retention during pregnancy, I believe that infection of mild grades is much more common than is supposed; but these mild infections frequently may cause no symptoms except changes in the urine which are often regarded by the physician as representing cystitis or the albuminuria of pregnancy. Many of these patients, who have symptoms definitely referable to their kidneys and are recognized as having the classical pyelonephritis of pregnancy, get well by changes of position, flushings with water, administration of urinary antiseptics and careful bowel hygiene. Should they not promptly recover under this palliative treatment, they should not be allowed to drag on indefinitely, as many of them are, jeopardizing the life of the child and subjecting the kidney to grave damage by allowing this retention to continue.

I have seen a number of large infected right renal retentions complicating pregnancy. These women are quite sick and septic, running high irregular fevers, occasional chills, suffering with marked weakness and exhaustion, pain and tenderness in the side and vomiting. All of these have had large, tender kidneys, the urine cloudy with pus and all colon infections. They have been allowed to run for weeks on palliative measures in spite of their failure to respond. Two of the patients were extremely sick; two had gone so long with pain, suffering and fever as to be on the verge of abortion. One of these aborted; the other did not. It is for this class of cases that the ureter catheter in my mind has a most admirable field. It is done with practically no risk to the individual, the relief of the retention is immediate, the patients rapidly improve and fever drops; one patient was saved from aborting; others have gone to term from their seventh month and had perfectly normal deliveries and have improved marvelously in their condition during the latter months of pregnancy following such drainage. If the renal pelvis has not been too markedly distended, it will regain its tone and empty itself, and the urine become normal. One case had to be treated for three weeks before the condition was rectified, but the patient following this had a perfectly normal last two months of pregnancy.

These women with large infected renal retentions who are extremely sick and do not respond to palliative measures, in the majority of cases have been subjected to the induction of premature labor, if they did not abort spontaneously, with high mortality to

the child, at least 40 per cent.; or they have been subjected to major renal surgery, such as nephrotomy, which was advocated by Davis before this Association in 1912, or by nephrectomy. One is impressed with the fact that so few of these persons have had a thorough trial with the ureter catheter, and I believe that even in the severe grades of infected retentions during pregnancy, if one is patient and uses a large retained ureteral catheter, most of these women will respond, provided the retention has not been too profound. Most of them will be able to go to full term, and have a perfectly normal labor.

Should such large retentions not be relieved in a short time, the patient's kidney is probably a third degree retention kidney, and will eventually have to be surgically attacked. Such kidneys are extraordinarily rare, but I believe that many of these kidneys may be kept under control by means of the ureter catheter until pregnancy has terminated.

Evidences of renal retention should not be palliated too long, but should be promptly drained by means of the catheter to prevent the pelvic musculature from being too greatly stretched, and the renal parenchyma from being disturbed. I am confident that if obstetricians would follow this plan, there would be far fewer damaged right kidneys, and more full term babies.

ABSTRACT OF DISCUSSION

DR. EDWIN BEER, New York: Years ago I was enthusiastic about ureter catheter irrigations of the pelvis and ureter in these cases, but during the last five years I do not believe I have washed a single pelvis, and the patients not so treated have done quite as well as those that I used to wash out. I would like to ask Dr. Caulk to give us some evidence of the fact that a pelvis which has been chronically stretched has resumed its normal shape; in other words, that it is no longer hydronephrotic and that its cubic content has been reduced. I have seen no evidence of that. It must be a very difficult proof to bring to convince the average man, because on filling the pelvis with colored fluid and testing its distensibility in the same case one day you may find the patient will take 20 c.c. and the next day only 5 c.c. The same thing may happen if you introduce thorium or argyrol. So that it seems to me, short of operation, one cannot find proof that after leaving in an indwelling catheter the non-acutely stretched pelvis resumes its normal shape.

DR. WILLIAM F. BRAASCH, Rochester, Minn.: I observed a case in a woman who had had a mechanical obstruction. A year later a pyelogram showed a normal pelvis; showing beyond question that following removal of the obstruction the pelvis will recede to practically normal size. A very large hydronephrosis, or one that is infected, will not do that. But most cases of that type, the type occurring during pregnancy, will do so. The large hydronephroses do not occur during pregnancy. That pregnancy is not the cause of the large hydronephroses is shown by the fact that only a small percentage of the patients we have operated on were pregnant. There is always some other factor present. There is no doubt whatever that introduction of a catheter in the pyelitis of pregnancy is the only way in which the condition can be relieved. It is quite remarkable how patients who have suffered for weeks with marked disturbance will improve by the mere passing of a catheter into the pelvis and draining.

DR. A. J. CROWELL, Charlotte, N. C.: From a rather large experience in irrigating the kidney pelvis with various preparations, among which is silver nitrate, it being the best, I am convinced that wonderful results can be obtained by this plan of procedure. A woman during her first pregnancy had an abortion on account of pyelitis. About the third or fourth month of the second pregnancy she began suffering with all the symptoms of pyelitis. The physician who had her in charge called me in consultation and on catheterizing the ureters secured quite a lot of pus from the right kidney, indicating a marked right pyelitis. The pelvis was irrigated with a 1 per cent. solution of silver nitrate and its strength gradually increased up to 5 per cent. She got along quite well as long as we kept up this treatment every third or fourth day. The urine cleared up almost completely and the patient felt so well she decided to abandon treatment.

DR. MARTIN KROTOSZYNER, San Francisco: I wish to report a case of pronounced right sided pyuria and deterioration of renal function, in which the ureteral spurt appeared as a white puff. A collargol pyelogram showed a pronounced kink of the ureter, near the renal pelvis, and a moderate enlargement of the pelvis and of the berry-shaped and irregularly outlined calices. Marked improvement of the relative function of that kidney was noticeable soon after the pyelography, and when this procedure was repeated, the pyelogram showed a material straightening of the ureteral kink and a reduction in the size of the renal pelvis, while the shape and size of the calices had remained stationary, except for a slight reduction in the size of the median calix. A third pyelogram, made about two or three weeks later, showed a fairly normal renal pelvis and ureteropelvic anastomosis, the berry-shaped calices being the only pyelographic feature of pathologic note. Meanwhile renal function on the affected side had become equally as good as that of the other kidney, while the clinical symptoms had improved to such an extent that it was decided, for the time being, to refrain from operative interference.

DR. H. L. KRETSCHMER, Chicago: The ureteral catheter has a definite field of usefulness in the treatment of pyelitis of pregnancy. Formerly, nearly all of these patients were treated by emptying the uterus. This method of procedure is still employed by many obstetricians, and I think it is a mistake. I have seen two very severe cases of pyelitis of pregnancy that were treated successfully by the ureteral catheter; one patient had a temperature of 104 F., chills, sweats and streptococci in the urine. She had been advised to have the uterus emptied. I inserted a catheter into each kidney pelvis, and injected silver nitrate into the pelvis; there was an immediate cessation of symptoms, and she went on to full term. The second patient had a residual urine of 30 c.c. in the right pelvis. Her temperature varied from 96 to 105 F. She was treated with the ureteral catheter. We attempted to leave the catheter in the pelvis for continuous drainage, but it was not well borne. The pelvis was drained of residual urine and irrigated with boric solution, and 20 to 25 c.c. of a 10 per cent. protargol solution were injected into the pelvis. She went on to a normal delivery. A recent report of her urine shows it to be free from pus but not free of organisms.

DR. F. R. CHARLTON, Indianapolis: I wish to report the case of a woman who was delivered on May 9. One week later she went into an acute infection of some sort, with a temperature of 105 F. There had never been a history of any sort of urinary difficulty. As for a pyelitis running back to infancy, there was nothing to base such a statement on. She has had one remission since the middle of May with, practically a normal temperature. The first time I catheterized her ureters I found a compensatory flow from the right kidney and a complete disturbance of the left kidney. We injected argyrol, and ten days later, the flow from the left kidney was practically equal to the flow from the right. The left kidney took 25 c.c. of fluid without the slightest sign of distention. In the right kidney we used considerably less. There was a definite obstruction of some sort at about the point where the ureter crossed the brim of the pelvis. The chief point of interest was whether this was an injury caused during the progress of delivery. If that is so I am at a loss to explain the apparent advanced condition in both pelves. But, by reason of the passage of the catheter two or three times and the use of a very strong injection of argyrol, she has in every way been immensely improved. I have been puzzled by this picture chiefly on account of the enormous size of the left pelvis and the very apparent anomalous condition of the opposite side, wondering whether we could have stumbled into a polycystic kidney. There are, however, no palpable masses to be felt.

DR. J. R. CAULK, St. Louis: I followed these patients with the ureteral catheter afterward for the amount of residual urine and also with pyelograms. The ones I have followed have had practically normal pelves. It is just a question of watching these patients and draining them. Even though you cannot cure all of them, I think you should give them a chance through catheter drainage, and not empty the uterus or do more drastic measures on the kidney during pregnancy. Certainly, the cases I have seen responded and did not need any such major surgery. I do not believe that lavage accomplishes what we are doing; I think it is just a question of emptying the renal contents. With regard to kinks, I do not know that it is a kink that is causing the trouble in pregnancy. We all know that the common time for obstruction is at the fifth to the seventh month, when the broadest part of the uterus is at the pelvic brim. Later on when the uterus changes its position and the pressure is more or less relieved, the musculature of the pelvis is allowed to contract and empty, rather than any relief of kinking in the ureter itself.

ETIOLOGY OF THE EPIDEMIC ACUTE RESPIRATORY INFECTIONS COMMONLY CALLED INFLUENZA *

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Epidemics of acute respiratory infections have occurred at irregular intervals for centuries in various parts of the world, and their prevention has been one of the most formidable problems in preventive medicine. These infections, different from other epidemic diseases, seem least liable to modification by hygienic or geographic conditions, and at some time in its history almost every race of people has suffered from their ravages. During these visitations, recorded in centuries of medical history, the general mortality is greatly increased; the etiologic agent, independent of its own virulence, may increase the death rate by combining with preexisting diseases, or by lowering the resisting power of the individual to such an extent that other more formidable infections gain a foothold and cannot be overcome. Furthermore, it is very striking that, notwithstanding the wide diversity of conditions under which these great epidemics have occurred, the clinical manifestations of the disease have always been the same. Usually the symptoms are those of an acute infection of the upper respiratory tract, but occasionally of the intestinal tract, with a rapid course and characterized especially by a very marked prostration of the patient. The complications are quite numerous, and probably represent the most important factor in determining the mortality of these diseases. Infections of the accessory nasal sinuses, lobar and lobular pneumonia, pleurisy, lymphadenitis and otitis media are common complications, while arthritis, pericarditis, abscesses, erysipelas, peritonitis, appendicitis, cholecystitis, illnesses diagnosed scarlet fever, and acute nephritis are frequently observed.

The pathologic anatomy of the disease is quite varied, and usually consists of the complicating morbid changes. Acute inflammation of the mucosa of the respiratory passages, varying grades and types of lobar and lobular pneumonia, generalized lymphadenopathy and infections of the various serous surfaces of the body may be mentioned as more or less typical of the pathologic anatomy of these infections.

Nothing can more forcibly indicate the definite character of the causative factor in these epidemic infections than this close similarity of symptoms and complications during several centuries and under such varying degrees of civilization. Whatever this factor may be, it must have a universal distribution and a most variable pathogenicity. Aside from a few observations on previous isolated epidemics, the most important bacteriologic work on these diseases was done during the great pandemic of 1889-1892. Notwithstanding the great number of observations during this time, however, no observer has satisfactorily proved that one species of bacteria is of primary importance in the causation of the disease. The larger group of investigators, including Weichselbaum, Newman, Ribbert, Finkler, Friedrich, Jaccoud, Gaucher, Bouchard and others found streptococci, pneumococci and staphylococci in the sputum and postmortem material from cases of influenza, and regarded the disease as a streptococcus or a mixed streptococcus and pneumococcus infection. In 1892, however, Pfeiffer published his great work on influenza in which he described a small gram-negative hemoglobinophilic bacillus as the causative factor, and this work gained almost universal acceptance at this time. The previously described bacteria — streptococci, pneumococci and staphylococci, because of their frequent presence in the sputum of normal persons, were henceforth considered as secondary invaders and of minor importance in the etiology of influenza. Pfeiffer isolated influenza bacilli from the sputum and bronchial tissues of persons suffering from the disease, but he was unable to find these organisms in the blood stream or satisfactorily to reproduce the disease in animals, although many attempts were made. Similar results were obtained by many of Pfeiffer's contemporaries. According to Pfeiffer, these gram-negative hemoglobinophilic bacilli cause true influenza, which he considered a local inflammation of the respiratory tract. Although these conclusions obtained wide acceptance for a time, except in France, recent investigators have failed to corroborate his findings, and the importance of this organism has been called into question. Davis and others have repeatedly found these bacilli in various diseases, such as whooping cough, tuberculosis and chronic bronchitis, in which there is a mucous expectoration, and many other diseases, and except in influenzal meningitis these observers consider the influenza bacillus of no primary importance. Again this organism has not been found with any regularity associated with the epidemics of acute respiratory infections since 1890. Whether or not Pfeiffer's bacillus was the causative factor in the great pandemic of 1890, there has been little evidence brought forward in recent years to support the view that it is of any great importance in the etiology of the disease.

During the winter of 1915-1916, the United States was visited by a severe epidemic of acute respiratory infections which resembled in every detail the great epidemic of 1890. This outbreak was apparently first noticed in the middle western states, and it spread rapidly over the entire country, taking a heavy toll of human life. December and January were the months in which these infections were most prevalent, and the epidemic had almost completely lost its impetus by March, 1916. During the height of this epidemic in Chicago, sixty-one cases of the disease were studied bacteriologically, and the results form the basis of this paper.

In all the cases the nasal discharge and sputum were examined, and in a few instances blood cultures were made. In forty-six instances, hemolytic streptococci

* From the Memorial Institute for Infectious Diseases.

were found in predominating numbers, and in six of these cases these organisms were isolated from the nose and throat in pure culture. Green-producing streptococci were found in thirty instances with one pure culture, and pneumococci in thirty cases with four pure cultures. Staphylococci were isolated in fifty cases, *Micrococcus catarrhalis* in six, and Freidländer's bacillus in one case. In only one instance was the influenza bacillus found, and then in small numbers. Anaerobic cultures were also made in the majority of cases, but there were no findings of any great interest. The *Bacillus rhinitis,* which has been described by Tunnicliff in connection with acute rhinitis, was found in the nasal discharge in two cases, and fusiform bacilli were not uncommonly observed in these anaerobic cultures.

The majority of the patients were studied early in the course of the disease, and, in the earliest of these, hemolytic streptococci were almost constantly found, especially in the throat. These different strains of streptococci grew on standard blood agar plates as small round semitranslucent colonies of variable moisture surrounded by a clear zone of hemolysis from 2 to 3 mm. in diameter. They were gram-positive, arranged in pairs and short chains, medium sized and slightly oblong, and occasionally faintly staining capsules were visible. They were highly virulent for rabbits, doses of 1 c.c. of a twenty-four hour broth culture usually causing multiple arthritis and death in from five to ten days.

The pneumococci isolated were usually in small numbers, and often presented the characteristics of the organism found in the mouths of normal persons which Cole and his associates call Group 4 or the atypical type of pneumococci. The green-producing streptococci were also usually found in small numbers, and were in the instances studied relatively avirulent. In regard to the staphylococci found, it is interesting to note that many of the strains were hemolytic when first isolated.

In many instances the attacks of grip were followed by atypical pneumonias, and bacteriologic studies of material from these cases, both antemortem and postmortem, revealed the presence in predominating numbers of hemolytic streptococci in most instances. In no instance in which postmortem material was examined was the *Bacillus influenzae* found. In nine cases blood cultures were made, four of which were positive, three yielding hemolytic streptococci and one pneumococci in pure culture.

The most significant findings in this work were the hemolytic streptococcus, which, when present, was usually in predominating numbers. and the almost complete absence of the *B. influenzae,* although the disease simulated in every detail the so-called true influenza. The question of filtrable viruses cannot be excluded in such diseases, but in three early cases in which virus cultures were made no results were obtained. The results seem to indicate that the virulent hemolytic streptococcus must be considered as a very important factor in the etiology of these "grippal" diseases. Whether or not the infection is primarily a streptococcus infection cannot be determined; but, as the disease progresses, this organism rapidly becomes of paramount importance.

Throughout the literature on epidemic human respiratory infections there have been described coincident widespread epidemics of acute distempers among horses and occasionally other animals. These epidemics have been so frequently simultaneous that many of the earlier observers have described the clinical manifestations of the disease minutely. It is only necessary to say that the clinical picture, pathology and complications of the equine epidemic disease simulated very closely epidemic respiratory infections in man.

The clinical symptoms are always the same. The onset is sudden with a chill and high fever, or with a profuse mucous nasal discharge which rapidly becomes purulent, and profound exhaustion. In exceptional cases, gastro-intestinal symptoms have been noted as premonitary manifestations. The course is rapid, and usually terminates favorably unless serious complications intervene. The complications are, however, frequent, and determine the character of the prognosis. Pneumonia of a lobular type but in some instances lobar, pleuritis, empyema, abscesses, arthritis, acute nephritis and conjunctivitis are the most common complications. The pathologic picture simulates in every way that of human "grippal" infections, and it may be said that the two infections are quite similar in epidemiology, clinical manifestations, pathology and complications.

Such an epidemic occured among the horses of the United States during the winter of 1915-1916, and was at its height during the decline of the human epidemic, gradually abating with the advent of warmer weather. Great numbers of horses were attacked, and the disease spread rapidly along the various shipping routes to all the great concentration markets in the country. This epidemic was felt more severely in Chicago and New York, and in these cities thousands of horses suffered from the disease.

I had the opportunity to study this epidemic infection as it occurred in the Union Stock Yards veterinary hospitals in Chicago. Extensive bacteriologic observations were made on the nasal discharges and blood obtained during all stages of the disease, and on a large amount of fresh postmortem material. The technic used was similar to that used in the examination of material from human infections.

This work, which includes examinations of more than 100 horses sick or dead with the disease, yielded strikingly uniform results. Hemolytic streptococci have been isolated in pure or mixed culture from the nasal discharge before death, and from the infected tissues after death in almost all instances. In a large series of blood cultures taken at various stages in the course of the infection, hemolytic streptococci were found in pure culture in a large percentage of cases. Furthermore, these organisms have been isolated from pneumonic exudate obtained by lung puncture during life, infected joints, kidneys and urine in acute nephritis, abscesses, iritis exudate, acute painful swellings on the extremities of infected horses, a condition simulating erythema nodosum in man, and infected lymph nodes during the course of the disease. Other organisms, such as staphylococci, green-producing streptococci, gram-negative bacilli and *Bacillus subtilis,* were found occasionally in the cultures from the nasal discharges. It is also interesting to note that *Bacillus tetani* was found in these cultures in a few instances.

The results which have been briefly outlined indicate that the hemolytic streptococcus was a factor of primary importance in the etiology of this epidemic infection in horses; but before this conclusion can be considered logical, other possibilities must be excluded. The question of filtrable virus being responsible for the infection must be thought of. To obtain some information on this question, many culture and inocu-

lation experiments have been carried out. The methods for the cultivation of viruses suggested by Noguchi and others were used, and Berkefeld filters were usually found of sufficient density to remove the bacteria. In twelve instances the mucous nasal discharges of horses in the first stage of the infection were suspended in sterile physiologic sodium chlorid solution and filtered through Berkefeld filters. This filtrate was cultured aerobically and anaerobically as well as sprayed into the nose of normal horses. In no instance did these culture or inoculation experiments yield any results which would indicate the presence of a filtrable virus. It is reasonable, therefore, to conclude that, using the known methods for identification of a virus, a virus is either not present in the nasal discharges of horses suffering from epidemic respiratory infections or it is not demonstrable.

Of three horses which were inoculated intranasally, however, with washed fresh cultures of hemolytic streptococci, one developed the typical acute infection three days after inoculation. This experimental infection ran an uncomplicated course and terminated in recovery in about fourteen days. The other two horses developed a slight mucous nasal discharge following inoculation, but the general reaction did not justify the conclusion that they were suffering from the disease. Up to this time immunity reactions have been studied in only a few instances, and the results have been inconclusive.

The streptococcus isolated from the equine respiratory infections corresponds with the organism described by Hel, Schütz, Pfeiler and others as the etiologic factor in pleuropneumonia in horses. The streptococci from human and equine sources, although similar in many characteristics, differ widely in pathogenicity, and seem to be highly parasitic for their specific hosts. The pathologic anatomy of the two epidemic respiratory diseases, human and equine, however, are quite analogous and typical of streptococcus infections.

When the observations just described are collated, some interesting relationships become evident. The epidemic of acute respiratory infections occurring in the United States during the winter of 1915-1916 simulated in every characteristic the great epidemic of 1890. In a detailed bacteriologic examination of material from sixty-one instances of this disease, the influenza bacillus was found in only one case. On the other hand, virulent hemolytic streptococci have been found in preponderating numbers in the noses and throats in these cases of influenza which suggest strongly that these streptococci play an important rôle in the etiology of these epidemic infections. The conclusion is certainly warranted that the influenza bacillus was of no primary importance in the causation of this epidemic of "grippal" diseases.

In regard to the epidemic of acute respiratory diseases in horses that occurred simultaneously with the human epidemic during the winter of 1915-1916, the accumulated evidence strongly suggests that the causative factor was also a hemolytic streptococcus. This streptococcus derived from equine sources, although similar in many cultural and morphologic characteristics to the streptococcus from human sources, differed from the latter in its biologic reactions, a fact which renders improbable a common etiology for the two infections. The pathogenic properties of each type of streptococcus for each specific host were quite similar. Furthermore, it is interesting to note that the conditions under which the two outbreaks of respiratory diseases occurred in man and in horses were quite analogous from the epidemiologic point of view. The activity of the horse market during the past year, the collection of large numbers of horses from the agricultural districts of the United States into concentration yards, and congested shipping facilities occasioned by the abnormal demand for horses created an artificial environment which simulated quite closely the crowded state of living among human beings — a factor apparently highly important in the transmission of these epidemic respiratory diseases. The disease prevalent at first only in the large concentration markets, rapidly spread along lines of transportation until horses in the more remote parts of the country were attacked.

This study of two diseases, apparently caused by two organisms of similar morphology and cultural characteristics, but differing in their pathogenicity for other hosts, occurring under similar epidemiologic conditions and characterized by identical pathologic lesions, emphasizes the importance of comparative pathology in the development of human medicine.

THE SURGICAL THERAPY OF BENIGN AND MALIGNANT TUMORS OF THE URINARY BLADDER*

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During recent years a renewed interest in the treatment of bladder tumors has been awakened, and with the introduction of the more extensive use of endovesical operative procedures as well as with the application of radium, new vistas have opened. With those procedures that are purely palliative this paper will not deal. Its limits, broad enough, will be the purely surgical therapy. Perhaps it is premature to attempt to standardize therapy in this field. By those of us who are fortunate enough to see many of these cases such an attempt should be made, even though further experience may lead to many modifications of the statements that seem justified today. Moreover, I hope that the discussion which this presentation will lead to will contribute a great deal to the elucidation of the subject before us.

From a therapeutic standpoint, cases of bladder neoplasm usually present themselves in three definite groups:

A. Benign papillomas, including single and multiple recurrences and papillomatoses.

B. Papillomas that cystoscopically simulate benign growths, that are microscopically malignant and respond but slowly, if at all, to the high frequency cauterization.

C. Papillary carcinomas and other types of malignant carcinomas and sarcomas which infiltrate the bladder wall.

My experience has demonstrated to me that all cases under Group A, except the papillomatoses, can be treated successfully by the endovesical high frequency method, unless: (1) the hemorrhage is too severe, or recurs at every introduction of the cystoscope; (2)

* From the Mount Sinai Hospital, Surgical Service.
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the growth is inaccessible, or (3) the patient is intolerant. I have observed permanent cures by this therapy in these cases, including both the very large and the multiple papillomas, for a period of six years.

On the other hand, cases of papillomatosis, usually the result of very numerous implantations following a previous operation, are not as a rule fit subjects for endovesical therapy. Such therapy would be interminable, and in these cases, as well as in those three types of benign papillomas just enumerated as being unfit for the endovesical therapy, I believe an open operation should be performed.

In these cases, I believe, the bladder should be exposed through a wide suprapubic extraperitoneal incision in the Trendelenburg position. There should be the greatest gentleness exercised in all manipulations so as to avoid breaking off possible implants, and all exposed surfaces should be protected with gauze packings or thoroughly cauterized with heat. To insure oneself against implantations, the bladder should not be filled before operation, and it should be drawn out of the abdomen by its urachal end. This is readily done by gently pushing back the peritoneum to either side of the median line, when the urachal strand can be readily doubly clamped and cut between. By drawing forward on this band by means of the lower clamp, the peritoneum is gently stripped away from the bladder and the greater part of the organ brought forward to the surface of the body without undue traumatism of the tumor within the viscus. Several layers of gauze packings are now placed about the well exposed bladder, protecting the perivesical space and abdominal incision. Then the bladder is incised and the edges of the at first small incision are seized with forceps, which are used as retractors. If a papilloma is seen, it is immediately seared with the Paquelin cautery (hooked point) well into its base. Gradually the incision in the bladder is prolonged, each growth as it presents being seared in the same way. As little sponging as possible, and that as gentle as possible, is permissible. Through the gradually enlarged incision the whole interior is carefully surveyed, and every growth as well as every suspicious area is carefully paquelinized. At times such thoroughness may necessitate the use of the cautery for the greater part of an hour. In those cases in which there are very large tumors, these must be seized with blunt ring clamps and their pedicles seared, as it would take too long to burn them to a crisp in situ. Having assured oneself that there are no more growths to cauterize, the incision in the bladder is, in its turn, thoroughly cauterized, each clamp on the edge of the incision edge being removed so as to prevent any possible implant where the clamp has held the incision. Then to destroy any fragments that accidentally have broken off, the whole field is bathed for several minutes in alcohol. After this, fresh packings are placed around the bladder, and the incision in its anterior wall is closed in two layers, turning in the charred edges. Suprapubic tube drainage and closure of the superficial wound complete the operation.

Despite this long use of the cautery, there is no more postoperative discomfort than after ordinary suprapubic cystostomies, and except for a slightly more marked pallor of the mucous membrane, the cystoscopic picture several months, as well as a year or more later, gives no indication of what has been done.

When we come to Group B, papillomas which respond slowly and poorly to high frequency cauterization and which show microscopically changes suggestive of malignancy, though cystoscopically apparently benign, we approach a debated terrain. Some believe that these should be treated by endovesical methods, either the high frequency cauterization, with or without a snare, or first with radium as suggested by Young and then with the high frequency cauterization.[1] This position is taken because of the well recognized poor results of open operation. This teaching, if accepted, would lead to dire results, as malignant neoplasms would regularly be treated endovesically, and the proper time for an operative radical cure would have been lost. Others, realizing[2] fully that this type of growth may at times be cured by endovesical procedures, and realizing also that the malignant change may have progressed into the depths of the growth and that the extent of this progress cannot be determined by examination of superficial pieces of the neoplasms, favor the open operation. To the latter position I myself adhere. In 1912 I emphasized[2] that poor response to the Oudin current pointed to malignancy and indicated operation.

The only exception to this would occur under the following conditions. A patient is examined with the cystoscope, and a papilloma, apparently benign, is found. A piece of growth is immediately removed for microscopic examination and the growth is at once thoroughly cauterized with the Oudin current. If on reexamination within the week, which I do as a routine, the response to the cauterization has been such as I am used to seeing in typical benign papillomas, the growth having melted away, I naturally proceed with the high frequency current, even though the microscope reports marked cellular changes pointing to malignancy. During this brief respite further pieces are examined microscopically to determine my procedure. If such examinations show again similar atypical cells and other evidence of malignancy, if the response to the high frequency cauterization is also atypical, I believe it is safer to advise radical operation. Though there can be no doubt that such malignant changes in the superficial part of the growth may be destroyed by endovesical cauterization,[3] it is equally certain that we cannot tell how deeply those changes may extend in any particular case; and if they do extend into the depth, a cure by the high frequency current is out of the question. I believe, therefore, we must work out an operative technic that will allow us to deal successfully with these cases, and not shirk our duty and try methods that are doomed to failure from the very start, in a very definite proportion of our patients.

The operative treatment of these cases, I believe, will be identical with that of cases of outspoken and microscopically proved malignancy, that is, Group C. In these two groups of cases, B and C, the surgical procedures will vary with the site of the growth or growths, from a partial cautery cystectomy to a complete cystectomy. Just as in the technic described above for papillomatoses, etc., here, gentleness and care, avoidance of implants, extensive excisions with

1. Compare Geraghty: Surg., Gynec. and Obst., 1915, **21**.
2. Beer, Edwin: The Treatment of Papillary Tumors of the Urinary Bladder with the High Frequency Current (Oudin), THE JOURNAL A. M. A., Nov. 16, 1912, p. 1784.
3. Beer, Edwin: Footnote 2; Removal of Neoplasms of the Urinary Bladder, THE JOURNAL A. M. A., May 28, 1910, p. 1768.

adjacent pelvic fat and lymphatics is absolutely essential to success.

Before describing the technic in these cases, the first point that comes up for discussion is whether the suprapubic approach should be extraperitoneal or transperitoneal. The latter route I have found more dangerous than the former. The advantages incidental to being able to explore the peritoneal cavity for metastasis in distant organs have proved elusive. Despite such deposits, all things being equal, I believe we should go ahead and give local relief by resection. As the immediate mortality of extraperitoneal partial, as well as complete cystectomy, has been nil as compared with the transperitoneal operation, I have during recent years restricted the use of the transperitoneal route to tumors on the posterior wall of the bladder. Opening the peritoneum widely in these cases, one can readily detect involvement of the peritoneum overlying the tumor, and regularly remove the whole thickness of the bladder wall. If this technic is used, I believe it is safer to place a tube drain in the pouch of Douglas, provided the bladder is the seat of an infection, as so often is the case in malignant tumors. For tumors on the lateral walls, on the anterior wall, about the ureters, on the trigon and at the neck, the extraperitoneal approach, I believe, is preferable. If the peritoneum is opened during the manipulations incidental to liberating the bladder, palpation of the pelvis, especially of the pouch of Douglas, can readily be made, and then the opening should be sutured lest infectious material be spilled and the peritoneal cavity be infected. Many of those cases, as I see them, have already a diminished resistance, owing not only to their disease and the superadded cystitis, but also to the back pressure effect on the kidney or kidneys, as well as that which comes with advancing age. A superadded, even mild peritonitis may, under such circumstances, deprive the patient of an otherwise successful operative interference.

For tumors of the lateral walls, anterior walls and ureteral regions, I believe, therefore, that an extraperitoneal cautery excision is indicated, with or without extraperitoneal ureteral implantation. For tumors of the neck and trigon (as well as for numerous scattered malignant growths), provided the patient consents, I believe a complete cystectomy, cutting through the middle or upper third of the prostate which forms our pedicle, and taking along the pelvic fat and lymphatics, seminal vesicles, etc., with implantation of the ureters through two small lateral incisions in the skin of the iliac fossae, until we know how to implant them safely in the intestine, is the operative procedure indicated.

In doing the latter operation, the complete cystectomy, naturally the bladder must not be opened. It is stripped out of its bed, the vascular ligatures are applied as near the pelvic wall as possible, and all the fat is peeled toward the bladder, as in the radical Wertheim operation. The ureters are drawn out so as to project beyond the level of the skin, are intubated, and are attached to the skin by sutures.

In doing the partial cystectomy with the Paquelin cautery, the bladder is delivered, etc., without filling, as previously described under the operative treatment of papillomatosis cases. The growth is carefully exposed and its whole surface burned thoroughly. Then well away from the base of the growth, with Paquelin blade, a cautery excision is made. All incisions in the bladder are seared just as carefully as possible, and the whole area is bathed in alcohol for several minutes. If the ureteral meatus is sacrificed, a neostomy is readily made at some new point without undue traction, with a couple of chromic sutures which draw the ureter into the viscus and a couple that attach it at its extravesical entrance to the bladder. After changing the packings that fill the perivesical space, the bladder is closed in layers and suprapubic tube drainage is instituted.

CONCLUSION

My experience in considerably over 100 cases studied during the past six years has brought me to this standpoint:

1. In all cases of benign papilloma, primary or recurrent, whenever possible, employ endovesical therapy and preferably the high frequency cauterization.

2. In all cases of extensive benign recurrences, papillomatoses, as well as all benign cases unsuitable for endovesical therapy, employ the suprapubic extraperitoneal Paquelin cautery excision, technic as described above.

3. In all cases of microscopically suspicious malignant papillomas that look clinically benign and that do not respond promptly to endovesical high frequency cauterization, perform a Paquelin cautery partial cystectomy.

4. In all cases of microscopically proved malignant tumors, that look clinically malignant, proceed at once to Paquelin cautery partial cystectomy or to total cystectomy, depending on the site of the growth, employing the technic described above. If the growth is in the posterior wall, the transperitoneal approach is probably preferable. If the growth is in any other site, the extraperitoneal approach is preferable, as it is less dangerous and gives even better access to the lateral pelvic recesses.

5. Gentleness in manipulations, thorough and intensive use of cautery, drawing the bladder out of the abdomen before opening it, and protective packings in the perivesical wound, all aimed against the danger of implanting new growths on the raw surfaces, are destined, I believe, to make our efforts in this difficult field more uniformly successful.

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ABSTRACT OF DISCUSSION

DR. EDWARD L. KEYES, JR., New York: Dr. Beer is better qualified to speak on this subject than any of the rest of us, and when he places a very large category of these tumors out of the range of intravesical treatment, we may take his opinion seriously. I am skeptical in regard to the microscopic diagnosis. There are those who with the microscope will tell you what kind of a tumor can be treated intravesically and what kind requires excision for its cure. The real criterion is the one that Dr. Beer has laid down precisely, whether or not these patients get better promptly with the intravesical treatment. If they do not, you are wasting time. If you are going to do a suprapubic section for multiple papillomas, or papillary carcinoma, the various technics described may be classed as intraperitoneal or extraperitoneal, cautery or excision. I have seen Dr. Beer perform his operation and no operation appeals to me more than his does. I am inclined to believe that he is a little too fussy on the score of potential implantation. The searing of the bladder wounds, etc., is quite unnecessary if every step has been taken with the precision that Dr. Beer has achieved. I do not feel quite so keenly as Dr. Beer the difference between intraperitoneal and extraperitoneal operation. I have done a number of successful

intraperitoneal operations and do not feel as he does that the mortality is so greatly in favor of extraperitoneal work. Finally, in reference to cystectomy, I must ask Dr. Beer how many cystectomies he has done successfully. I have done a lot of cystectomies unsuccessfully. My experience with total cystectomy has led me to the conclusion that the scar left by previous cystotomies makes removal of the bladder very much more difficult. The whole prostate should come out. I understood Dr. Beer to say he took out a part of it. I believe we should first free the prostate from the perineum, then attack the bladder alone. It was stated yesterday that to do an operation on the order of the Wertheim operation in these cases is perhaps ideal, but rarely possible of materialization on account of the age and infirmity of these patients. I think that is true. Dr. Coffey of Oregon has described a method of implanting the bile duct or the ureter obliquely through the intestine that seems ideal. I have done three such operations since the first of January, doing one ureter at a time, as suggested by Mayo. That gives the patient a kidney to live on while he is having trouble with the other one. You do not infect both kidneys at one time. I have had three perfectly satisfactory results—the patients have very slight tenderness, rise of temperature, etc. Therefore I feel high hope of good results from this method of ureter implantation in the bowel. Implantation in the skin is bad, unless the patient has a million dollars and several servants to go around with bath towels mopping him up.

DR. WILLIAM F. BRAASCH, Rochester, Minn.: I have seen some of the results following total cystectomy and implantation of the ureter into the intestines, as suggested by Dr. Charles Mayo, and he and Dr. Judd have performed over twenty such operations. The patients recovered from the operation in over fifteen cases, and we have had only two postoperative deaths in the series, but a number of patients have died in the months following the operation. However, a large proportion of the patients are living and well. I have in mind particularly one case, a young woman who came to me with a bladder exstrophy three or four years ago. She agreed to take the chance of the operation. Dr. Mayo first implanted one ureter and then the second into the sigmoid, and later on removed the bladder. Now there is just a small scar where the bladder was. She holds the urine in the rectum six hours. She is a nurse, does all the operating room work, and looks the picture of health. That is only one of several instances. The implantation of the ureter into the skin has been tried and discarded. If the danger of infection could be removed and we would have a functionating ureter, the bowel offers the ideal site for implantation, because the urine can be controlled by the bowel after a few months of irritation just as well as by the bladder. The danger of infection is important, but most of these patients, particularly with exstrophy of the bladder, have a long standing immunity to infection. If with the vaccine treatment that Drs. Crabtree and Cabot have suggested we can increase this immunity it would be an added feature of the operation. As far as the oblique implantation is concerned, it seems to be of distinct value. It surely is better than direct implantation.

DR. JOHN A. HAWKINS, Pittsburgh: In times past this operation with the high frequency spark has been discredited by general surgeons. They are prone to open the bladder for any condition that may be found there. Therefore, I think it would be well for us to have them understand just what Dr. Beer would teach, and that is that this treatment applies only to cases of papillomas or nonmalignant tumors of the bladder. I have had quite a little experience with the high frequency spark, and with the results I have had I shall continue to use it as long as they respond to the treatment. We must impress on general surgeons that for a simple tumor of the bladder or a number of papillomas of the bladder the high frequency current is the operation of choice. There is no necessity for opening the bladder except when these tumors are very large.

DR. JOHN T. GERAGHTY, Baltimore: The selection of the best treatment for any tumor, of course, depends essentially on the diagnosis. I was very glad to hear Dr. Beer say that he did not depend on the microscopic diagnosis quite as much as he formerly did. We find from a very large experience in excising pieces of bladder tumors that it is impossible to tell, microscopically, an infiltrating carcinoma from a papilloma. We divide bladder tumors into benign, malignant, and papillary infiltrating carcinomas. The diagnosis we try to make principally from the cystoscopic examination and from palpation. We have practically given up excising pieces of the tumor, because we found that it was really impossible to differentiate. You will find cystoscopically in the average tumor, when it is malignant, that the papillae show necrosis. The least bit of necrosis indicates malignancy. Incrustations indicate malignancy. Again, around the border of the tumor you will frequently find an edema of the mucous membrane. That means malignancy. If, then, we are in doubt as to the nature of the tumor, we tentatively try fulguration. If the tumor is benign certain changes occur in it that indicate that it is disappearing. If, however, after fulguration the slough does not separate, it indicates that this is not a tumor for fulguration. In some cases the fulguration has cured the malignant papillomas. In some of these cases, in which the response to fulguration has been very slight, by first irradiating these tumors, we apparently changed the character of the tumor entirely. Tumors that had been there for several months slowly disappeared, so slowly that sometimes you felt doubtful that the tumor would respond to fulguration. After 400 or 500 milligram hours of radium we noted that the tumor seemed to change remarkably, and then one or two fulgurations would produce what weeks of fulguration had formerly failed to produce.

The use of radium in carcinomas has not been very satisfactory. Most of them have shown very little if any response, and so far, I think, we have only had one definitely infiltrating carcinoma that showed any very marked improvement. Two patients presented themselves on the same day with tumors in the same place, close to the vesical orifice, on the trigon, both infiltrating carcinomas. One was 60, the other 35. Irradiation was tried in both cases. The young man seemed to be stimulated by the radium. The tumor grew very much faster than you would ordinarily expect. In the other case the tumor apparently has disappeared. Cystoscopic examination a few weeks ago showed the bladder apparently normal. That is, however, the only case in which the radium apparently has had any effect on the extensive infiltrating carcinomas. We feel that when a diagnosis of carcinoma of the bladder is made, if the tumor is on the anterior wall it should be resected; if it is on the lateral wall it should be resected; if on the posterior wall, and of such a size that it can be done, it should be resected. We have done no cystectomies in recent years. It is possible, with the technic of handling the ureters better developed, that in the future we will do it in cases of papillary carcinoma in which no other method of relief is available.

DR. F. R. CHARLTON, Indianapolis: I doubt very much if doctors are physicists enough to actually know the chemical differences possessed by these different heat currents, the d'Arsonval, Oudin, diathermy, etc. My own feeling has been that it is a question of burning and that it does not make one bit of difference whether that burning is done with a hot iron, with a platinum tip, or some finely differentiated electrical current. Dr. Beer seems to place his dependence largely on the old-fashioned Paquelin cautery.

DR. EDWARD L. KEYES, JR., New York: Even radium, while scientifically different from the cautery, destroys tissue to a rather indefinite depth. Dr. Barringer has access to a very large store of radium and has made a tumor disappear by one application of radium. He has made another tumor disappear, which was a small pathologically proved infiltrating carcinoma of the trigon, about the size of your thumb nail. It had been burned frequently and in vain by intravesical methods elsewhere. Dr. Barringer gave a single burning, and three months later we cystoscoped and found no tumor in the bladder. It was a typical ulcerating type of carcinoma.

DR. LOUIS E. SCHMIDT, Chicago: I have had not less than five cases of recurrences. I call it papillomatosis of the bladder, or implantation. I will cite one case. A year ago a patient presented himself with the history that he had been suprapubically operated on a year and a half previously for the removal of a benign papilloma. He evidently had a very

stormy convalescence, requiring almost a year. On cystoscopy he had altogether too many tumors to count, certainly somewhere between seventy-five and 100. This patient was treated successfully in the course of four sittings, and I have had him under observation now for the last six months, and he is still entirely free. As Dr. Beer says, if it is possible to do that they certainly fall in the domain of intravesical treatment. I was fortunate enough in this instance to be able to reach every tumor. There is no question in my mind that if these patients return they are far better off, even if the periods are few and long between, and that this method of treatment is far superior to opening up the bladders repeatedly. I should like to mention the method which Dr. Kolischer and I have used in the last year and a half, that is, the diathermic method, which is probably nothing but electric coagulation or high frequency on a big scale. It requires a high frequency current and two electrodes. This method of treatment is used only for tumors where no resection of the bladder is permissible or where the question of cystectomy is out of the question. That is, it is reserved chiefly for tumors of the neck and base of the bladder. The bladder is opened and these electrodes (of different sizes and different shapes) are applied directly to the tumor. A thermocoagulation and a certain amount of destruction of tissue is obtained in that way. The heat is given off between the two electrodes, and does not radiate in all directions, particularly in directions in which you do not want it to radiate, as with the thermocautery. This slough is usually thrown off in due course of time, and then the patient is treated with radium. Dr. Kolischer has one case that he considers as a cure. I myself have treated not less than six in this manner, and the results have apparently been better than with the treatment of simply opening the bladder and using the thermocautery for the destruction of a growth which has been considered inoperable. I saw Dr. Keyes operate in one of the cases he mentioned and I was very much impressed with the ease and accuracy with which the Coffey implantation can be carried out. I think it is the best procedure brought forward for this condition.

DR. G. KOLISCHER, Chicago: I am satisfied that the surgery as practiced heretofore in tumors of the bladder is not satisfactory. In the very few instances where we have to deal with benign tumors we may succeed. Success is permanent success, and that in malignant tumors is very infrequent. For instance, men who have had a very large experience have practically abandoned operation for malignant tumors of the bladder. The primary mortality compared with the results which at best are only temporary is out of proportion to what we may accomplish. A combination of chemotherapy and radiotherapy offers encouraging results and does not endanger the patient's life. Our results are very much better, so far as we can judge now, than with any other method, so far as temporary cure is concerned. We have treated patients who were absolutely inoperable. It would be foolish to claim that they are entirely cured, because the time is too short, but at the present time they are well, as far as any one can determine. No man of large experience claims any definite cure in all his cases. In fact, there is only one case on record where a total cystectomy kept a patient alive fifteen years. In most of the malignant tumors of the bladder technically a radical operation is impossible. Ninety per cent. are sessile in the base of the bladder. Consequently there is no such thing as a radical operation. Fulguration is an excellent means of treating papillomas, providing they are benign. There is no surgical interference known that leads to definite results, but we have today by a combination of diathermy, chemotherapy and radiotherapy a means which has given encouraging results.

DR. FREDERICK C. HERRICK, Cleveland: I would like to ask Dr. Beer one question. How many benign papillomas of the first group which he has fulgurated have had no recurrence? We are struggling to get carcinoma early, and in a person of 40 we are always afraid we will find a recurrence in what we thought was a benign tumor.

DR. EDWIN BEER, New York: The first point I would take up is the question of the attempt to standardize the treatment of tumors of the bladder. The general surgeon still is very skeptical as to what can be done by the transvesical route. Although we may change our viewpoint as we have more experience, I believe we are now in a position to define fairly exactly what should be done in certain types of tumors of the bladder. Operation is not the only treatment. As to Dr. Kolischer's remarks, I consider them very reactionary. The same argument can be applied to the treatment of carcinoma in any organ of the body. If we take Dr. Kolischer's viewpoint nobody with cancer of the bladder will have a chance at permanent cure, and that people with cancer of the bladder have been cured for a number of years cannot be denied. I do not know how long they must be free before considered cured. Dr. Kolischer suggests fifteen years of freedom. I have recently shown a series of six cases, representative of the different types of growth in the bladder, some of which went back four, five and six years, and remained well after a partial cystectomy. I also showed a case of total cystectomy that had been done more than a year before, and the patient, although unfortunately not a millionaire, was fairly comfortable. Whether endovesical cauterization is purely an application of intense heat or not is as yet an unanswered question. I think there is a very big difference between the d'Arsonval and the Oudin current. I prefer the Oudin. *A priori*, theoretically one would say the d'Arsonval current would be better, but as a matter of practice I have come to the conclusion that the Oudin current is to be preferred.

Dr. Geraghty touched on one very important point. He suggested incorrectly that I had changed my viewpoint as to the value of microscopic data. I made one exception in Group 2. I stated that if a tumor looks benign, if the microscope shows it to contain atypical epithelial cells suggestive of carcinoma, if the tumor melts away under high frequency on the very first treatment, I would hesitate to do a resection, though the microscopic section showed atypical cells. The reason is self-evident: If a piece is cut off of the tumor, a piece of one of the fronds of a papilloma, and that happens to show carcinoma microscopically, it is perfectly conceivable that that carcinoma may be limited to a small area, and if the whole tumor melts away at the first treatment, so that at the second examination instead of finding a tumor such as we saw originally, we find a small residue, I believe one is fairly safe, though not absolutely safe, in considering that a satisfactory response, and one is justified in continuing the treatment, even though the microscopic examination may have suggested a carcinoma. Unfortunately we have not any satisfactory way of implanting the ureters in the bowel so as to prevent infection. I have only come to my viewpoint regarding total cystectomy during the last two and a quarter years, and during that time I have done only two such cases. When cases come that are suitable for a cystectomy, naturally I have to lay the matter before the patient, and at least three patients who were suitable have refused. Any number who were unsuitable have gone on and died of their carcinomas. We all know how these patients suffer after cystostomy or bilateral nephrostomy. Although the operation of cystectomy is an extensive one, luckily my patients have survived it. I think the mortality is going to be much smaller than it has been in the past. If I were concerned personally I would select it.

Coal Mine Fatalities in 1916.—Reports from state mine inspectors received by the U. S. Bureau of Mines show that there was a decrease of about 3 per cent. in coal mine fatalities in the United States in 1916 as compared with 1915, while the increase in the production of coal amounted to about 12 per cent. The fatalities were 2,225 in 1916 as compared with 2,269 in 1915. Without having the figures as to the number of men employed, but on the basis of the number employed in 1915, the fatality rate was 3.03 in 1916 as against 3.09 in 1915 for each 1,000 men. This is said to be the lowest rate since 1898, when about half the number of men were employed. According to the calculations of the Geological Survey the coal production for each fatality in 1916 was the greatest in the history of coal mining in the United States. In 1916 there were eleven mine disasters in each of which five or more men were killed, the total number of killed being 154, which is the lowest since 1901. In 1915 the number was 262, in 1914, 316, and in 1913, 464.

TRICHINAE IN PORK AND NEMATODES IN BUTTERFISH

IN THEIR RELATION TO THE IMPLIED WARRANTY IN THE SALE OF ARTICLES OF FOOD *

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Several instances of the sale of trichinous pork and of nematode-infested butterfish have recently been brought to the attention of the division of zoology of the Hygienic Laboratory. As these cases bring up the question of the "implied warranty" connected with the sale of articles of food for consumption by human beings, it seems advisable to discuss them from the standpoints of medical zoology and public health.

Certain laws provide that "diseased" meat and meat from "diseased animals" may not be sold, and in the last analysis the interpretation of these laws is based on the interpretation of the term "diseased."

At least one judge has recently held that the term "diseased" in respect to the food laws should be interpreted in its popular sense. If, however, this view is admitted, it will be found that from the standpoint of the parasitic infections this interpretation would exclude all meats from sale, for probably no animal that has ever been slaughtered for food has been entirely free from infection by one parasite or another. Thus a very high percentage of hogs and sheep is known to be infected in the muscles (namely, the "meat," in narrower sense) with certain parasites belonging to the protozoan group named *Sarcosporidia*. Academically, these animals are diseased, but should they be so classified in the sense of the food laws? No case of disease in man has ever been traced to these (sarcosporidian) parasites when swallowed in pork or mutton, yet every person who has eaten pork, mutton or lamb a number of times has certainly swallowed many of the protozoa in question.

Again, every animal used for food has in its intestine either protozoa, roundworms, flukes or tapeworms. Some of these parasites, especially certain protozoa, are mere scavengers in the intestinal tract, but many of the infections undoubtedly do more or less harm to their hosts. Accordingly, academically these animals are "diseased," but are they "diseased" in the sense of the food laws?

If all animals harboring animal parasites are to be construed as "diseased," in the sense of the food laws, as they are undoubtedly "diseased" from the abstract academic point of view, it is clear from the zoologic point of view that no meat can be sold legally; hence it would appear logical to the zoologist to conclude that the term "diseased" in the sense of the food laws should be construed in a manner different from its academic interpretation and that, in the sense of food laws, "diseased meat" and "meat from diseased animals" really mean *meat that is likely to produce disease when eaten by human beings.*

Thus, pork, beef or mutton from animals containing *Sarcosporidia* in their muscles or strongyli in their stomachs would not, from this point of view, be meat from "diseased animals," in the sense of meat inspection regulations and food law, despite the fact that this meat is from "diseased animals," from the academic, clinical or pathologic point of view as applied to the animals themselves, unless the infection were so extensive as to produce in the meat an edematous or other condition sufficiently extensive to render the meat disgusting or otherwise unfit for food. But in the latter case the meat should be condemned, not because of the presence of the parasites but because of the secondary conditions due to unusually extensive infection by the parasites. Any other conclusion would mean that the law forbids the sale of all meat; but since the law permits the sale of meat, and since the law cannot be assumed to permit the sale of meat which it specifically excludes from sale, it would seem logical to conclude that it is the intent of the law to forbid the sale only of such meat as is likely to cause disease in man, regardless either of the academic or of the popular interpretation of the term "diseased" as applied to the animal itself.

Accordingly, from the zoological point of view, the term "diseased" in meat inspection and food laws is technically quite distinct from the term "diseased" in clinical work and in its ordinary sense.

On basis of the view that "diseased meat" in the sense of the food laws should be interpreted as meaning "meat that is likely to produce disease when eaten by human beings," the question arises as to the bearing of this interpretation on the "implied warranty" on the part of the vendor, that meat he sells comes under this construction. Here, again, the subject has a distinct zoological bearing.

If a vendor sells a bushel of live clams or live oysters in the shell, the sale, and therefore the implied warranty, is made on the assumption that the clams and oysters will be taken out of the shell before being eaten. Despite the fact that the clams and oysters have been sold in bulk, the vendor sold these goods in good faith that they would be *properly prepared for food before* they were consumed, and his implied warranty certainly cannot be assumed to cover injury to a person who might swallow the clams and oysters, shells and all, any more than it could be assumed to cover the point that the purchaser of this food allowed the clams to remain exposed to the sun for several days, to die and decay, before they were eaten.

Likewise, the vendor of live lobsters, crabs, snails, chickens, fish, or of flour, rice, salt, red pepper, milk, corn, green apples, green bananas, nuts of all kinds, potatoes, lettuce, berries, pineapples, coconuts, peas in pod, string beans, etc., presupposes in his implied warranty that the purchaser who buys these foods is under an implied guaranty that they will be *properly handled and properly prepared for reception into the stomach,* before they are served as food. Any other assumption would make the vendor responsible for all omissions and commissions (over which he has no legal control) with respect to the food articles after they had left his ownership and possession.

* An outbreak of disease, diagnosed as trichinosis, occurred as a result of eating pork. Suits for damages were brought against the vendor. At the trial of the first case, physicians testified to the effect that the trichinae could have been discovered by proper inspection, and the case was decided against the vendor.

In the trial of the second case, I was requested to appear as expert witness. The surgeon-general consented to my appearing on the condition that no fee would be accepted. I testified that no inspection could guarantee the absence of trichinae, therefore that raw pork is not a proper article of food, and that the implied warranty involved in the sale of food was predicated on an implied guaranty that the food would be properly prepared for reception into the human stomach; if the food was not properly prepared, the vendor could not be held responsible for results dependent on lack of proper preparation. The trial judge ruled out part of my testimony because of the existence of a certain ruling of a higher court. This case was decided against the vendor. Several other cases came to trial before other trial judges, the testimony was repeated, and these cases were decided in favor of the vendor.

The line of argument I followed created some interest among several judges and attorneys who have discussed it with me, and it is on their suggestion that I bring these views to the readers of THE JOURNAL.

The implied warranty in the sale of food is therefore correlated with and dependent on an implied guaranty in the purchase of food.

Accepting this last point as axiomatic and fundamental, let us apply the principle to trichinous pork.

When a meat dealer sells pork, he is selling a product which *in its raw state* is dangerous to health, for the reason that it frequently contains certain disease germs (trichinae) the absence of which cannot be guaranteed by any practical and proper method of meat inspection known. *If the pork is properly cooked* or otherwise properly prepared, these germs are killed, are harmless, and do not per se render the pork "diseased" (as food), for if dead they cannot produce disease.

As the absence of live trichinae in fresh pork cannot be scientifically or practically guaranteed by any known practical and proper method of inspection, and as the presence of live trichinae in raw pork is liable to produce disease if eaten by human beings, the conclusion follows either that *raw* pork is not a proper article of food or that the law calls on the butcher to guarantee something that from the very nature of things is not subject to guaranty on basis of any available knowledge; in other words, that the law demands that the butcher must, in principle, *wager a bet* that the pork does not contain live trichinae. A bet is not a collectable debt at law, and financial reimbursement involved in an implied warranty that is nothing more or less than a bet would seem, logically, to have the same legal status as a bet!

To the zoologist the only proper conclusion is that pork which is not properly prepared for food comes under the same general principles as oysters or clams in the shell, undrawn fowls, live lobsters, uncooked rice, flour, etc., namely, that unless the pork is properly prepared to become food fit for consumption, it is not fit for food at all, and that when a vendor sells raw pork with the implied warranty that it is fit for food, this implied warranty is premised on an implied guaranty by the purchaser that he will prepare it properly to serve as food.

From this point of view, if a person contracts trichinosis, the vendor of the fresh pork is not in any way responsible, because had the pork been properly prepared to serve as food, trichinosis could not have resulted; and if the meat was properly prepared for food, the diagnosis of trichinosis was incorrect.

The case involving the condemnation of butterfish is slightly different from that of trichinous pork.

In August, 1915, the wholesale price of these fish was reported as 7 cents a pound, on a day when the inspectors in one of our cities discovered that certain lots contained small worms. The fish were condemned, and the next day the wholesale price is reported to have fallen to 1 cent a pound. The economic loss resulting to an important industry is estimated to have amounted to many thousands of dollars. The dealers appealed to the United States Fish Commission, and the commissioner requested "an expression of opinion from the Public Health Service as to the nature of these parasites and the probability of their communication to human beings through the eating of butterfish."

The report from the zoologist to the service may be summarized as follows:

1. The parasitic worms from the butterfish submitted for examination and opinion represent a larval (agamic) ascarid.

2. It does not agree with any parasite that is recognized as cause of disease in man.

3. There is no evidence that it would come to maturity in man, even if the ascarid reached the human stomach in uninjured condition and viable.

4. Most of said parasites seem to occur on the viscera of the fish, and since the viscera are removed before the fish is cooked, the number of ascarids that might eventually reach the human stomach is enormously reduced.

5. Since the butterfish are cooked before being served as food, those agamic ascarids that happen to be present in the flesh or under the parietal peritoneum would be cooked before being swallowed; hence they would not be infectious.

6. This office has no evidence that any case of disease in man has ever been caused by these small parasites.

7. The worms in question belong to a group, some members of which form a toxic substance that produces symptoms.

8. Clinical evidence is lacking in support of the theoretical possibility that these worms might, through such a toxic substance, produce harm if cooked and eaten by persons.

9. From the esthetic standpoint, opinion might differ as to the advisability of permitting fish, with these worms in their flesh, to be placed on the market.

10. My own view is that if numerous worms were found in the flesh of the fish, the purchaser himself would discard it; if only a few were present in the flesh, there is no evidence that these would do harm if cooked and eaten with the fish; accordingly, it appears safe to leave the matter in the hands of the public.

This conclusion is based on the premises that neither the raw flesh nor the entrails of butterfish are eaten in this country; in any locality in which these premises do not hold, the conclusion might, on local study, have to be modified.

11. My recommendation is that the bureau take the position (*a*) that the presence of parasitic worms in or on the viscera of food fishes that are eaten cleaned (eviscerated) and cooked does not render these fishes unfit for food; (*b*) that there is no evidence that agamic ascarids in the flesh or under the parietal peritoneum of fish are infectious to man; (*c*) that we have as yet no evidence that said agamic ascarids are toxic to man; (*d*) that at most, so far as present evidence goes, the presence of said agamic ascarids in the flesh or under the parietal peritoneum is an esthetic question, and (*e*) that if said agamic ascarids are present in the flesh or under the parietal peritoneum in sufficiently large numbers to greatly depreciate the food value of the fish or to render the fish disgusting or repellent as an article of food, the condemnation if made at all should be made clearly and distinctly on this ground and not because of possible communicability of said parasites to man; (*f*) that the bureau advise conservatism in this matter, as the point involves:

The possibility of reducing the home supply of an important article of food, used by many people;

The possibility of an extension of the condemnations to many other species of food fishes;

The possibility of a serious blow to a very important industry (fishing), in which large sums of money are invested and on which many families rely for their livelihood;

The possibility therefore of an actual lessening of our national food supply, with reactionary increase of food prices in other lines;

The possibility of unjustly developing toward fish in general, as an article of food, a prejudice from which it may take years to recover;

and all of these dangers are of a nature that they should not be lightly incurred on basis of theoretical possibilities which, so far as present knowledge goes, are not supported by any tangible practical clinical experience. In fact, the ultimate public health injury resulting from a possible restriction of the food supply might easily outweigh the occasional injury done to a few individuals in case these persons happened to develop some toxic symptoms as the result of swallowing too great a number of these parasites.

Here again is a case dependent on the interpretation of the word "diseased" in the sense of the food laws. As food, the fish should not be considered "diseased" since the presence of these innocent little threadlike worms encysted chiefly on the entrails would not render the fish liable to produce disease in man; but from the standpoint of the fish themselves, pathologic changes exist, and hence disease is undoubtedly present.

THE CYSTOSCOPIC DIAGNOSIS OF CONTRACTED BLADDER*

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TYPES AND UNDERLYING CAUSES

The abnormally small, or contracted bladder (*Schrumpfblase* of the Germans) may occur on the basis of a variety of etiologic factors. The congenital origin of the condition is extremely rare, and only the acquired forms deserve consideration for practical purposes.

In certain forms of neuroses (neurasthenia and hysteria) contraction of the bladder may occur as the result of continuous tonic spasm of its muscular coat. The main symptoms of this condition consist in distressing pollakiuria and strangury, gradually leading to almost continuous tenesmus, and eventually resulting in marked loss of bladder capacity. Classical descriptions of this "functional intolerance of the bladder" are recorded in the French literature by Guyon,[1] Guiard[2] and Janet.[3]

Extravesical inflammatory processes, terminating in definite pericystitic and paracystitic connective tissue involvement, as frequently encountered in the female pelvis, may occasionally lead to contracted bladder. I have had the opportunity to examine such bladders, in which loss of capacity did not seem to be due as much to disease and contraction of the bladder wall as to distortion of the viscus by pericystitic adhesions.

Neoplasms, pressing on the bladder from the outside, and large concrements or tumors inside the viscus, may be the cause of considerable reduction of bladder capacity. Many years ago I observed a man of 35 with a huge sarcoma of the bladder and complete loss of capacity, rendering cystoscopy impracticable.

Particularly cancer of the prostate, involving the bladder wall, is liable to result in rapid reduction or total loss of capacity. I recall the case of prostatic cancer in a man of 71, with most distressing tenesmus and constant dribbling, in which the bladder, on account of its extreme smallness, could be found only with great difficulty at suprapubic exposure.

Contracted bladder, due to stone, is particularly frequent in children, as stated by Kausch.[4] I have seen two such cases in boys under 7 years. In one of them loss of bladder capacity was apparently due to the presence of a large stone and the resulting severe cystitis, while in the other case, concerning a boy of 5, a comparatively small and rough oxalate, situated at the outlet of the bladder and embedded in its wall, proved to be the cause of constant dribbling connected with most distressing and continuous tenesmus, and resulting in almost complete loss of capacity by bladder contraction.

By far the most frequent cause of contracted bladder is chronic cystitis which, in its final stage, may present two main forms of the condition. Reduction of the caliber of the bladder cavity may be due to concentric hypertrophy of its muscular coat, connected with marked trabeculosis. Such bladders, if viewed from the outside, appear to be of fairly normal size, while the abnormal thickness of their wall is, in reality, responsible for the small capacity. Cases of that character, presenting an abnormal irritability of the muscular apparatus of the bladder, not based on tangible central lesions, are recorded in the French literature, and particularly Guyon[5] gives, under the heading "Cystite douloureuse," a masterly description of its symptomatology; he, as well as Hartmann,[6] have published photographs of excellent specimens of the condition.

Through the courtesy of Dr. Henry Meyer of San Francisco I had the opportunity to observe a typical case of that character, in a patient of his: A man of 58 for thirty years past, had suffered from gradually increasing urinary disturbances, as the only cause of which a pronounced phosphaturia could be ascertained. Bladder capacity was about 40 c.c. Cystoscopy under general anesthesia, on account of rapid expulsion of the injected fluid, was barren of diagnostic significance. On account of the intensity of the symptoms, uncontrollable by expectant measures (bladder dilatation), suprapubic cystostomy was performed, at which the bladder wall was found to be considerably thickened and trabeculated. The patient's untoward urinary symptoms were almost instantaneously relieved by establishment of suprapubic drainage, which, on account of the return of distressing symptoms, following attempts to remove the drain, was made permanent, and by which the patient has been kept comfortable and entirely dry for more than eight years past.

While this form of contracted bladder, though, is comparatively rarely encountered in the literature and in practice, the second form, that due to interstitial chronic cystitis, comprises the greatest majority of cases and, therefore, is of the utmost practical importance. Pathologically this condition is characterized by an extension of the process from the mucosa of the bladder wall to its muscular coat, replacing it by connective or scar tissue and, by these means, materially reducing, or totally destroying elasticity of the bladder wall.

On the degree and extension of the pathologic process involving the bladder wall depends the intensity of symptoms. In the most pronounced cases which come under observation, bladder capacity may be reduced to less than 10 c.c. Constant dribbling occurs in all cases up to a capacity of 30 c.c. and above, and incontinence practically ceases only at or above a capacity of 50 c.c., when bladder evacuation will occur spasmodically and be attended with postmictural dribbling. Pain in or around the bladder, which may be either constant or assume the character of intermittent paroxysms, may vary in intensity according to the secretory activity of the primary infecting focus, and recurring periods of exacerbation and remission of inflammatory bladder symptoms may develop by the occurrence of new or secondary infecting foci.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Guyon: Leçons cliniques sur les maladies des voies urinaries, Paris, 1897.
2. Guiard, M.: Ann. d. mal. d. org. génito-urin., 1891, p. 230.
3. Janet: Ann. d. mal. d. org. génito-urin., 1895, p. 132.
4. Kausch: Arch. f. klin. Chir., 1907, **23**, 78.
5. Guyon: Ann. d. mal. d. org. génito-urin., 1887, p. 72.
6. Hartmann: Des cystites douloureuses, Thèse de Paris, 1887, Obs. IV.

CLINICAL SYMPTOMS

The clinical diagnosis of the abnormally small bladder is easily established on the basis of its characteristic complex of symptoms, and by determining reduction of bladder capacity by means of the catheter. Recognition, though, of its existence, does not, in the great majority of instances, pave the way to rational treatment of this most distressing condition, which renders the sufferer unfit for work and social intercourse, and sooner or later terminates his life by ascending renal infection. Successful treatment, insuring relief or cure, practically depends on the correct localization and removal of the underlying cause. Viewed from this standpoint the diagnosis assumes the aspect of one of the most difficult and complicated medical problems.

Cystoscopy, for obvious reasons, would be the most appropriate and exact diagnostic method, if its application were always feasible. Cystoscopic investigation of the bladder, in order to be of diagnostic significance, requires, according to good authority (Nitze, Kummell, Luys and others) a bladder capacity of at least 50 c.c., which in a large number of cases is not available. Although, by the use of the American close vision cystoscope, it is possible to make an examination with less than 50 c.c. of distending fluid,[7] many authors still consider cystoscopy impracticable and contraindicated in cases below that capacity. The question, therefore, arises, to what extent the underlying etiologic factors of contracted bladder are diagnosticable without cystoscopic investigation.

The diagnosis of contracted bladder due to stone is comparatively easy, which in most instances is feasible on the basis of roentgenography or by means of the stone searcher. By eliciting an unusual irregularity or roughness of the bladder wall, with metal sound or catheter, the diagnosis of concentric hypertrophy may, occasionally, be facilitated. Bladder contraction, due to pericystitic inflammatory processes, can, as a rule, be correctly interpreted by anamnesic data and clinical investigation. Equally amenable to correct diagnosis are cases of contracted bladder occurring on the basis of long standing prostatic, urethral or fistulous affections. The diagnosis of bladder contraction, complicated by one or more diverticula, is, in the presence of a large diverticular sac, occasionally feasible on the basis of shadow-casting roentgenography alone. I have seen an interesting case of that type:

A man of 74 with long standing distressing cystitic symptoms, a small prostate, as revealed by rectal palpation, and a bladder capacity of about an ounce, showed after thorium radiography, on the plate, a large sac, which communicated with the bladder by a small opening, at the center of its anterior wall. The capacity of the diverticular sac by far exceeded that of the bladder.

The availability, though, of such prima facie evidence, without the aid of cystoscopy, is the exception, and the differential diagnosis of diverticulum, prostatic involvement, and renal infection may, even in the hands of the experienced observer, present most appalling difficulties, as in the following case:

A man of 57 entered the hospital with symptoms of severe cystitis and marked urosepsis. Prostate by rectum was considerably enlarged. There was almost constant dribbling of purulent urine. Bladder capacity was about 40 c.c., with 15 c.c. of residual urine, presenting the appearance of pure pus. After long and painstaking treatment of the bladder, it was possible to effect momentary cystoscopic inspection, revealing fairly normal outlines of the sphincter. Attempts, though, to view the trigon and fundus were constantly frustrated by instantaneous clouding of the bladder fluid, as usually observed in severe pyuria of renal origin. When, after many futile attempts, bilateral ureteral catheterization was finally performed, clear urine was obtained from both kidneys, thus proving the vesical character of the persistent pyuria, as the actual source of which the cystoscope, finally, demonstrated a diverticulum at the bladder fundus.

CYSTOSCOPIC MANAGEMENT

While, though, the etiologic diagnosis of some forms of contracted bladder may occasionally be feasible without cystoscopic evidence, the differential diagnosis of idiopathic or inflammatory bladder contraction (*cystite douloureuse*), the abnormally small congenital bladder, and the classical tuberculous scar tissue bladder (*tuberculöse Schrumpfblase*) is a most difficult task, which, without the aid of the cystoscope, in most instances is impossible of performance. This is the more regrettable, since the tuberculous form by far exceeds in frequency all other types of bladder contraction. Guyon[8] found, among twenty-one specimens of contracted bladder, ten to be of tuberculous character. Kelly[9] considers a large percentage, probably 80 or 90 per cent., of cases of intractable or rebellious cystitis, characterized by loss of bladder capacity, to be associated with tuberculosis of the upper urinary tract. I myself have seen more cases of tuberculous bladder contraction than of all other types combined. The extravesical origin of long standing cystitis was pointed out, long before the advent of the cystoscope, by Thompson,[10] Ultzmann,[11] Coulson[12] and others, who declared cystitis to be, but very rarely, an idiopathic condition, while the probable renal origin of chronic bladder affections is mentioned in the writings of precystoscopic authors like Guyon[13] and Lebert.[14] Exact methods for the recognition of renal tuberculosis, at a very early stage, have been well established for many years past. Moreover, statistical investigations compiled by Rovsing,[15] Simon,[16] von Oppel[17] and others have proved that a large percentage of cases of renal tuberculosis, at least 50 per cent., are complicated by tuberculosis of the bladder, which only very rarely is encountered as the result of genital tuberculosis, and which, in all probability, never occurs as a primary condition. Viewed under this angle, many cases of so-called genuine or idiopathic bladder contraction, recorded by writers of the precystoscopic and earlier cystoscopic eras, like those of Rothschild[18] and Raskay,[19] would at present be recognized as tuberculous scar tissue bladders, while reported cures must be interpreted on the basis of autonephrectomy. In spite of these universally accepted facts, Guyon's[20] words, written about twenty-five years ago, descriptive of the distressing symptoms of patients afflicted with bladder tuberculosis, "these miserable sufferers, who so often are the object of diagnostic errors," have not lost their

7. Pilcher, Paul M.: Practical Cystoscopy, 1915, p. 110.

8. Guyon Leçons çliniques sur les maladies des voies urinaries, Ed. 3, 1896.
9. Kelly: New York State Jour. Med., April, 1906.
10. Thompson: Clinical Lectures of Diseases of the Urinary Organs, London, 1879, p. 294.
11. Ultzmann: Die Krankheiten der Harnblase, Deutsch. Chir., 52, 108.
12. Coulson: Diseases of the Bladder, 1891, p. 163.
13. Guyon: Footnote 8, p. 455.
14. Lebert: Cyclopedia of the Practice of Medicine, Diseases of the Bladder, p. 688.
15. Rovsing: Arch. f. klin. Chir., 1905, 77, 43.
16. Simon: Beitr. z. klin. Chir., 1901, 30, 1.
17. Von Oppel: Folia urol., 1907, p. 494.
18. Rothschild: Deutsch. med. Wchnschr., 1901, 27, 84.
19. Raskay: Deutsch. med. Wchnschr., 27, 298.
20. Guyon: Footnote 8, p. 389.

pungent significance with the present generation of practitioners. For cases of neglected cystitis, characterized by tenesmus, hematuria, pain and loss of bladder capacity, and therefore not *a priori* suggestive as being of renal origin, are even today, in many quarters, interpreted as primary affections and, unfortunately, become the object of cystoscopic investigation at a late stage, in which that procedure is impracticable.

In a man of 40, who was confined at a climatic sanatorium for pulmonary tuberculosis, and who had suffered for some time past from the classical syndrome of urinary tuberculosis, cystoscopy was found to be impracticable on account of persistent bladder intolerance toward attempts at water distention. Before the intention to remove the patient to a hospital equipped with modern cystoscopic facilities could be carried out, he died, rather suddenly, under uremic symptoms.

A man of 39 entered the hospital with grave symptoms of urosepsis, superinduced by long standing and severe cystitic symptoms. The history pointed to left-sided renal involvement. After a few attempts at cystoscopic diagnosis, rendered futile in the extremely small and intolerant bladder, exposure of the left kidney revealed an inert pus sac (autonephrectomy), while the right organ showed, on the postmortem table, the typical picture of parenchymatous tuberculous nephritis. The guinea-pig inoculation test gave, later on, a positive result.[21]

A man of 41 was brought to the hospital in a state of deep uremic coma. Cystoscopy was impracticable on account of bladder intolerance. Roentgenography showed two apparently typical concrement shadows in the left kidney region. This organ, on exposure, was found to be considerably enlarged, containing a pus cavity at its upper pole, while in the center of the organ two small cavities, filled with cheesy material, were present. The right kidney was found, at the postmortem examination, to be small, presenting the typical picture of tuberculous atrophy. The bladder was extremely small, showing marked scar tissue infiltration (interstitial cystitis[22]).

Fortunately, though, the chronicity of the condition permits, in the great majority of cases of tuberculous bladder contraction, of a longer period of observation and preparatory treatment, rendering feasible, under favorable circumstances, the exact focal diagnosis, which is indispensable to rational operative treatment.

Ocular inspection of the bladder, by means of the cystoscope is, in advanced cases of contraction, barren of diagnostic information. As a rule the cystoscopist encounters an intensely sensitive and inflamed bladder wall of a deep red angry color, on which all cystoscopic landmarks are more or less obliterated by irregular and ragged ulcerated areas with uneven edges, covered with necrotic shreds and purulent material. Ureteral meatoscopy, moreover, the most important object of cystoscopic investigation, is, as a rule, obviated in these extreme cases. Quite frequently the walls of the vesical portion of the ureter have become thickened and the sphincter has lost its contracting power,[23] or the characteristic ureteral spurt is, by stricture of the canal, changed into cystoscopically insignificant dribbling. Judging, furthermore, on the color and appearance of the secretion of either kidney, whether it be clear or turbid, is very difficult and often misleading. For, unlike in earlier forms of unilateral pyonephrosis, we are not dealing with a sharply circumscribed process, clearly localized about a ureteral orifice and pointing to infection of the corresponding kidney, but with much larger and more diffuse areas of inflammatory tumefaction and elevation, covering the whole trigon and fundus, and thus obliterating these cystoscopic landmarks by edematous and ulcerated tissues.[24]

The diagnosis, therefore, is but rarely aided materially by cystoscopic observation alone. In the majority of these extreme cases of bladder contraction, infection of both kidneys exists, and the only hope for the patient lies in the probability of ascertaining satisfactory function of one organ, which, after removal of its anatomically and functionally valueless mate, would be likely to recover from toxic nephritis. Reliable data on this most vital question can be obtained only by examination of separated renal urines, as available by catheterization of both ureters.

CYSTOSCOPIC MANAGEMENT

Cystoscopic investigation, therefore, must be conducted, from the start, with ureteral catheterization as its main object. Any other means, devised to obtain indications for life-saving nephrectomy, like bilateral exposure and palpation of both kidneys, as recommended by von Illyès[25] or application of functional tests on one kidney, after temporary clamping of the ureter of its exposed sister organ, as proposed by Casper,[26] ought to be *a priori* rejected as risky and crude diagnostic makeshifts. In fact, as the most potent source of enthusiasm for continuous and persistent efforts, or as the best protection against discouragement and disappointment, in the face of repeated cystoscopic failures, in these desperate and seemingly intractable cases, must be considered the cystoscopist's firm conviction that nothing short of bilateral ureteral catheterization will insure a successful issue of the case. Only in this way cooperation of the patient can be obtained, who, as a rule, consults the urologist, totally demoralized by long suffering. Not radical, therefore, and hasty cystoscopic measures, intended to force the diagnostic issue by one or two sittings, but painstaking work, characterized by perseverance, gentleness and infinite patience, may, by means of a large number of cystoscopic sittings, sometimes extending over several weeks, finally yield palpable diagnostic results. Successful cystoscopic management, besides that, is feasible only on the basis of modern urologic hospital facilities, including assistants and nurses specially trained for that work.

Most essential is tactful and efficient preparatory treatment of the bladder, which should not be conducted by means of the irrigator. Forceful bladder filling is to be shunned, as liable to excite detrusor spasm, resulting in simultaneous expulsion of catheter and injected fluid. "The more sensitive the bladder, the less fluid must be injected, if manipulations in the viscus are to be done with care," and "the bladder does not wish to be put on tension, but is ready to retain a certain amount of fluid only, which comes in mere contact with its wall." These golden rules, set down by Guyon,[27] should always guide the operator in his work. A good hand syringe will permit of measuring the proper amount of pressure to be exerted, and help to communicate to the operator's hand the onset of spasmodic detrusor contraction, which, by intermittent release of pressure, may readily subside. By cautiously adding minute amounts of fluid, thus imitating, as it were, physiologic bladder filling from above, disten-

21. Compare Am. Jour. Med. Sc., 1906, **131**, 217.
22. Compare Krotoszyner, Martin: Differential Diagnosis of Nephrolithiasis and Renal Tuberculosis by Roentgenography, THE JOURNAL A. M. A., Dec. 5, 1914, p. 2006.
23. Pilcher, Paul M.: Practical Cystoscopy, 1915, p. 375.
24. Rumpel: Cystoscopy as Adjuvant to Surgery, 1910, p. 59.
25. Von Illyès: Folia urol., 1912, **6**, 477.
26. Casper: Deutsch. med. Wchnschr., 1908, **34**, 1337.
27. Guyon: Footnote 8, p. 407.

sibility of the bladder may be gradually increased, according to the character of the underlying cause of loss of capacity. Bladder contraction, due to nervous cystalgia, or to inflammatory changes of the mucosa, on the basis of nontuberculous renal lesions, will yield more readily to tactful efforts at distention, to which the tuberculous scar tissue bladder, on account of loss of elasticity of its wall, generally proves refractory.

Extensive experience with these cases has convinced me that general narcosis for cystoscopic purposes is to be shunned as dangerous, and disappointing in diagnostic results. A tuberculous bladder wall will often not relax under ordinary general narcosis, and in order to obtain disappearance of bladder reflexes, such a profound degree of anesthesia is required that the patient's life would be endangered.[28] Attempts to increase bladder capacity under spinal anesthesia (0.06 tropacocain) are liable to result in more or less serious lacerations of the shrunken and ulcerated bladder wall, and hemorrhages of such intensity may occur that cystoscopic vision is obviated. But spinal anesthesia, because rendering cystoscopic examination entirely painless, is often indispensable, especially for initial sittings in very nervous patients. Under the guidance of the resourceful operator, however, even moral cowards become gradually used to cautious and delicate cystoscopic manipulations, so that, for later sittings, a previously administered codein—or morphin—suppository, or the usual local cocainization of the deep urethra will suffice. The anesthetizing effect of locally applied remedies is extremely limited in these severe bladder affections, and wherever possible, I try to carry on cystoscopic investigation without any anesthesia, which, for obvious reasons, is especially desirable in cases in which many sittings are likely to be required. Particularly for the beginning, I prefer brief cystoscopic sittings, at intervals, determined by the patient's local and general reaction to instrumentation. Everything in this connection depends on establishing the patient's confidence in the operator's skill and instrumental delicacy. In this way, the duration of sittings can be materially extended later on, without great discomfort to the patient, while cystoscopy may then be repeated at shorter intervals, without the occurrence of consecutive reactions.

Air cystoscopy I have entirely abandoned. Air inflation of the bladder, aside from being very painful, renders cystoscopic vision indistinct, on account of glaring light reflexes. Some authors, particularly Stoeckel, recommend that method as facilitating cystoscopy in severe hemorrhagic conditions. I agree, however, with Bransford Lewis,[29] that irrigation through one of the modern close vision cystoscopes is practically always sufficient to cope with that difficulty.

Bladder distensibility and capacity having been ascertained, the bladder wall is mechanically cleansed of adherent shreds of mucus and pus by small quantities of fluid, injected with the hand syringe. For initial cystoscopic sittings, merely aiming at quick orientation in the bladder, I prefer Nitze's evacuation cystoscope with inverted optic, which permits of meatoscopy from a bird's eye view, as it were, and, by this means, often facilitates localization of one or both ureteral orifices. Repeated change of fluid is accomplished by filling through the shaft of the cystoscope with the aid of two assistants, while the penis, in order to prevent expulsion of the injected fluid, is firmly compressed by the operator around the shaft during the act of actual cystoscopy. If every manipulation connected with the examination is done rapidly and skillfully, a more or less conclusive conception of the intravesical condition, including the most important features of the trigon, will be available in bladders capable of some degree of distention.

The various types of the Nitze cystoscope are entirely unsatisfactory in bladders below 40 c.c., in which meatoscopy is often found to be still feasible by means of the American close vision cystoscope. I am using for this work, almost exclusively, the Brown-Buerger double catheterizing cystoscope, the irrigating device of which allows of rapid change of the bladder fluid without disturbing the patient, by removing the optic, while the brilliant light of the instrument produces a large and clear picture of the ureteral orifice and its neighboring tissues. By keeping up almost continuous irrigation, it is often possible to bring into cystoscopic view the ureteral region in an even extremely contracted bladder, so that momentary glimpses of the meatus, sufficiently long for its catheterization, can be obtained. After catheterization of one ureter, identification and entrance of its mate is, occasionally, much more easily accomplished. In most instances, though, the finding of the other meatus, because of its abnormal position, owing to contraction and distortion from ulcerations, is fraught with difficulties which, at first, appear insurmountable, and may require many sittings, spent in laborious and systematic search of every groove and slit suggestive of the meatus. In rarer instances, catheterization of an orifice, located high up on the wall or roof, or hidden in a mass of ulcerated tissue, is feasible only by blindly searching in all ulcerated areas with the end of the catheter until, by chance, the meatus is entered.[30]

Of material aid in this work is chromocystoscopy (injection of 10 c.c. of 4 per cent. indigocarmin), if performed after previously determining the time of acme of color elimination. Since the majority of these desperate cases are characterized by involvement of both kidneys and material deterioration of renal function, meatoscopy should not be started until the generally delayed climax of appearance of blue coloring has set in.

Stricture of the ureter, unless located so low down in the tube as to obviate collection of urine of its corresponding kidney, is, as a rule, not a serious obstacle to the diagnosis, even though the obstruction remains impassable. Total obliteration of the canal, where the ureteral tube is shrunken to a blind cord, as the result of autonephrectomy, may entirely obviate the cystoscopic diagnosis, as in one of my own observations, reported elsewhere.[22] These cases, however, are rare and void of practical interest, since they generally are beyond repair.

Time and space forbid the enumeration of many more details, the neglect or omission of which, insignificant and unimportant as they may seem, nevertheless may frustrate success, while their harmonious combination, at the hands of the experienced and resourceful cystoscopist, will eventually pave the way to the correct diagnosis, as in the following observation, selected from my case records:

A man of 35 entered the hospital on account of severe "bladder trouble," which for a long time past had proved

28. Guiteras, Ramon: Urology, 2, 100.
29. Lewis, Bransford: Cystoscopy and Urethroscopy, p. 29.
30. Thomas: G. L.: Collected Papers of the Mayo Clinic, 1911, p. 404.

refractory to local treatment. Past history was unimportant, except that the patient had suffered from pain in the left kidney region at the onset of bladder symptoms. Physical examination was negative; the kidneys were not palpable. The patient complained of very painful and frequent (almost continuous) micturition with postmictural dribbling. The urine was cloudy, containing pus and blood microscopically and numerous acid-fast bacilli. The two hours' bladder phenolsulphonephthalein was 55 per cent.; blood cryoscopy, 0.546; blood urea, 192; bladder capacity, about 1 ounce. Momentary cystoscopic glimpses of the bladder wall revealed the picture of severe tuberculous cystitis; the landmarks of the trigon could not be made out on account of rapid clouding of the fluid. Dilatation treatment was inefficacious on account of extreme sensitiveness of the bladder, from which the injected fluid was almost instantly expelled. Under spinal anesthesia it was possible to catheterize the right ureter to a point about 8 cm. above the meatus, where it met an impassable obstruction. Right-sided renal secretion showed abundant microscopic pus and blood, many tubercle bacilli, and gave, later on, a positive guinea-pig test. The left ureter could not be localized in two further sittings under spinal anesthesia, at which also chromocystoscopy was applied.

From then on, short cystoscopic sittings, without any anesthesia, were held at regular intervals, about every fourth day. Determination of the acme of indigocarmin elimination revealed onset at about forty, and climax of blue coloring at about 90 minutes after injection. Finally, after many futile attempts to locate the left ureter, a blue spurt was seen to emanate from a point behind a fold of the mucosa, at the extreme upper end of the left side of the fundus. The beak of the cystoscope was pushed into that niche where the catheter found its way blindly into the ureter, and was easily moved forward to the pelvis.

Examination of renal urines demonstrated marked anatomic and functional deterioration of the right side, while the kidney secretion of the left side was almost clear, showing microscopically a few epithelial cells, no tubercle bacilli and no other bacteria. The guinea-pig test, later on, proved positive.

The right kidney, after its removal, presented the macroscopic and microscopic picture of caseous destruction, due to chronic tuberculosis. The nephrectomy wound was completely closed about three weeks after the operation.

The patient left the hospital locally and generally improved, while his bladder capacity had increased to about 100 c.c.

Prior to exact cystoscopic diagnosis, exposure of the left kidney, which was suspected to be anatomically and functionally destroyed, had been contemplated. Exposure and eventual removal of the other kidney might not have been undertaken at the same sitting, as too risky a procedure in the patient, exhausted by long suffering. Bilateral ureteral catheterization, on the other hand, at once clinched the diagnosis and rendered right-sided nephrectomy a safe and rational procedure.

CONCLUSIONS

1. The congenital and so-called idiopathic contracted bladder is rare and practically unimportant.

2. Bladder contraction, in the majority of instances, is due to extravesical causes (pyonephrosis, etc.).

3. Of the utmost practical importance is the tuberculous scar tissue bladder, secondary to renal tuberculosis.

4. The clinical diagnosis of contracted bladder is comparatively easy, while recognition of its underlying causes is very difficult and, as a rule, feasible only on the basis of comparative examination of renal urines, obtained by bilateral ureteral catheterization.

5. Successful cystoscopic exploitation of contracted bladders below 50 c.c. capacity is almost always feasible, provided sufficient time, modern urologic equipment, cystoscopic experience and skill, and cooperation of the patient are available.

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VALUE OF SPINAL PUNCTURE IN ETIOLOGIC DIAGNOSIS OF CARDIOVASCULAR DISEASES*

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The examination of spinal fluid in cardiovascular diseases was suggested to me by the finding of a positive spinal fluid Wassermann test in a man, aged 54, who had an aortic aneurysm, a bilateral optic neuritis and unequal pupils, and a negative blood Wassermann test. The spinal fluid showed also positive Nonne and Noguchi tests and a high cell count, consisting mainly of lymphocytes. These evidences of meningeal irritation or inflammation, as they undoubtedly are, were first described by Ravaut, and are now accepted without controversy. Yet no attempt has been made heretofore to arrive at an etiologic diagnosis of cardiovascular diseases by resorting to an examination of the spinal fluid in cases in which the blood Wassermann test has been found negative.

As Cabot[1] has shown, the etiologic factors in the production of these diseases may be grouped under four headings: (1) nephritis; (2) toxic conditions, such as gout and diabetes; (3) infectious diseases of the rheumatic type, as well as other infectious diseases, and (4) syphilis. In this classification, Groups 3 and 4 are contributory causes in the majority of the cases of cardiovascular disease. While more than one etiologic factor may play a part in the production of the morbid condition, still, a careful inquiry into the history, and a complete physical and laboratory examination will help considerably in determining the dominant cause. At this juncture it must not be forgotten that a patient, who can trace his cardiac affection to one of the other groups, may subsequently acquire syphilis and therefore present the above mentioned evidences of meningeal irritation. These instances are not of sufficient frequency, however, to interfere materially with the results here set forth.

The series of cases here reported consists of twenty-two out of about 200 found within the last year in the service of Dr. Williamson and myself at the Cook County Hospital, Chicago. Puncture was not done in cases of the endocarditic group, when the patient's condition was too serious to allow the procedure, or when a positive blood Wassermann test was obtained. In all, thirty patients were subjected to spinal puncture, of whom twenty-two showed positive evidences of syphilis. Among these twenty-two patients, five had aortic aneurysm; one, abdominal aneurysm; four, aortic regurgitation; nine, myocarditis in various stages of decompensation; two, hypertension, and one, angina pectoris. Only four of the entire series admitted syphilitic infection. A positive spinal fluid Wassermann test was obtained in seventeen cases. These included four of aortic aneurysm; the one of abdominal aneurysm; three of aortic regurgitation; eight of myocarditis, and the one case of angina pectoris.

The five cases yielding a negative Wassermann test were distributed as follows: one case of aortic regurgitation; one aortic aneurysm with a spinal fluid under high pressure and positive Nonne and Noguchi tests; one of myocarditis, with a negative Nonne test and a cell count of 36; two of hypertension, both with a

* Read at the meeting of the Society of Internal Medicine, Oct. 23, 1916.

1. Cabot, R. C.: The Four Common Types of Heart Disease, THE JOURNAL A. M. A., Oct. 24, 1914, p. 1461.

positive Nonne and Noguchi test, and a fluid under high pressure. One of these patients was a man of 34, with a systolic pressure of 260 and a diastolic of 140, who subsequently developed a hemiplegia and died.

An examination of the spinal fluid in the seventeen cases yielding a positive Wassermann test showed a positive Nonne test in the case of abdominal aneurysm; a high cell count in one case of aortic aneurysm; a positive Nonne test and normal cell count in another, and a positive Nonne test and cell count of 30 in still another. In one case of aortic regurgitation with a + + + + Wassermann test there was a cell count of only 1.

The fact that in this series there were no cases of double mitral lesion — a condition generally of endocarditic origin — may be of interest. Whether this is simply a coincidence, or whether these cases are all of syphilitic origin, which might seem to be the fact, can be determined only by the study of a larger number of cases than that covered by this report.

There can be no question of the presence of syphilis in those cases which yield a positive Wassermann test; but there may be in the case of those which are negative. Ravaut,[2] in 1903, showed that in the early stages of secondary syphilis a high percentage of involvement of the nervous system obtained. Altman and Dryfoos[3] reported 61 per cent., and Wile and Stokes[4] 63 per cent. involvement. The presence of syphilis is indicated by lymphocytosis, increased albumin and globulin, a positive Wassermann test and an increase in spinal fluid pressure. A pressure of 200 mm. or over is considered pathologic. I did not include in this series those cases which, in addition to high pressure, did not show some of the other evidences of spinal involvement mentioned above.

A lymphocytosis in the spinal fluid beyond the normal limits (Nonne,[5] 10 cells per cubic centimeter, Gutmann,[6] 5 cells per cubic centimeter, von Kafka,[7] 5 cells per cubic centimeter) is considered the most constant finding in connection with symptoms referable to the central nervous system. Bayley[8] quotes Mott as saying that lymphocytes in the spinal fluid are important evidence of syphilis of the central nervous system. He also states that there may be a distinct lymphocytosis without the power of complement fixing. When these points are borne in mind and errors in technic are eliminated, it seems almost certain that the results of the spinal fluid examinations are conclusive. As there were no other signs of tuberculous meningitis, and especially in view of the fact that several of the patients left the hospital improved, tuberculosis cannot be considered as a factor in the production of these changes.

Although there is no way of computing by the aid of these statistics the actual percentage of increase of cases of cardiovascular diseases determined in this way as due to syphilis over the percentage of such cases commonly known, the fact still remains that the etiologic factor under such conditions can be determined in a greater number of instances by resorting to spinal puncture. This applies particularly to those cardiac conditions which are now known to be of syphilitic origin in a large percentage of cases. These include aortic diseases and to a lesser extent myocarditis.

Where the etiologic diagnosis has been made, the treatment becomes simplified. Longcope[9] has shown that cases of long standing will not be benefited to any pronounced degree by salvarsan treatment, but that amelioration of symptoms, of temporary duration at least, may be obtained. In acute cases, however, Brooks and Carroll[10] have shown that heart involvement in early syphilis, irrespective of the lesion, may be cured by specific measures, independent of circulatory measures. My own experience has not been very satisfactory, although at times I thought that temporary benefit was obtained by specific treatment in cases of long standing.

SUMMARY

1. Positive Wassermann tests have been obtained in the spinal fluid in seventeen out of thirty selected cases in which the blood Wassermann test was negative.

2. In five of those cases in which the spinal fluid Wassermann test was negative, either lymphocytosis or a positive Nonne or Noguchi test has been found.

3. Spinal fluid examination, as a result of these findings, would seem to be of value in cardiovascular diseases, when syphilis is suspected and the blood Wassermann test is negative.

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2. Ravaut: Ann. de dermat. et de syph., 1903, Series 4, No. 2.
3. Altman and Dryfoos; quoted by Wile and Stokes (Footnote 4).
4. Wile and Stokes: Jour. Cutan. Dis., 1914, **22**, 607. Dermat. Wchnschr., Sept. 12, 1914.
5. Nonne: Syphilis of the Nervous System, translated by Ball.
6. Gutman: Dermat. Wchnschr., 1914, **58**, 705.
7. Von Kafka: Die Cerebrospinalflüssigkeit, Ztschr. f. d. ges. Neurol. u. Psychol., **6**, 415.
8. Bayley: Pathology of Syphilis and Parasyphilis.

ANILIN POISONING*

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As comparatively few cases of anilin poisoning have been described, the symptoms, treatment and outcome of the following case should prove of interest, particularly since the dye industry has of late tremendously increased.

Anilin poisoning occurs in one of three ways: (1) by the swallowing of anilin with suicidal intent; (2) by inhalation of anilin fumes, or (3) by absorption of anilin through the skin from the clothes. The symptoms of anilin poisoning are similar to those of nitrobenzene.

REPORT OF CASE

History.—White man, aged 20, single, laborer, admitted July 22, 1916, Hospital No. 38491, had been working for one week in an anilin dye factory. In carrying out his work, he inhaled anilin fumes. He felt weak, especially in the lower extremities, and had severe headache. He tried to walk but was unable, lost consciousness, and was brought to the hospital.

Physical Examination.—The respiration was slow and superficial. The head and scalp showed no signs of injury. The pupils were equal, regular in outline, dilated, and reacted to light and accommodation. The conjunctivae were dark blue. The nose was negative. The ears were bluish. The mouth, lips and gums were dark blue. The tongue was clear, but decidedly bluish. The throat was congested. The teeth were in poor condition. The neck showed no rigidity, and no glands were palpable. The finger nails were blue. The chest was well formed; expansion was fair and equal; pulmonary breathing was normal. Heart examination revealed the apex

9. Longcope, W. T.: Syphilitic Aortitis: Its Diagnosis and Treatment, Arch. Int. Med., January, 1913, p. 15.
10. Brooks, Harlow, and Carroll, John: The Treatment of Heart Involvement in Syphilis, THE JOURNAL A. M. A., Oct. 24, 1914, p. 1456.

* From Dr. Merzbach's Service at the Brooklyn Jewish Hospital.

in the fifth interspace, 3½ inches from the midsternal line. The right border was at the right sternal edge. The left corresponded to the apex beat. The sounds were of poor muscular quality, and were irregular in rhythm. There was a systolic murmur at the apex which was transmitted toward the axilla. The second pulmonary sound was accentuated. The pulse was irregular and of poor tension. There was no sclerosis. The abdomen was distended. The liver and spleen were not palpable. There was no tenderness or masses. The extremities were negative. The reflexes were normal. There was a severe acne over the chest and back. A pustular acneform rash existed on the anterior aspect of the chest and forehead (anilin rash?). The patient developed restlessness and pulmonary edema, which subsided under venesection.

Treatment and Course.—The patient was admitted to the ward at 11 : 30 a. m., July 22, 1916. The heart was hyperactive and the pulses were of poor tension. A phlebotomy was done, and 14 ounces of very dark blood were removed. The patient had projectile vomiting consisting of food previously ingested. He voided involuntarily and expelled dark fluid by rectum. He had some facial twitchings. After the venesection, his color slowly improved. The systolic blood pressure was reduced to 100, diastolic, 80. A hypodermoclysis of 1,000 c.c. of sterile water was given. The condition slowly improved.

July 23, the patient felt much improved. The color was good. He felt comfortable.

July 25, the systolic blood pressure was 110, diastolic, 80.

The temperature on admission was 98.6, rose to 100 in six hours, and then dropped to normal the next day and stayed there.

The pulse on admission was 110; it dropped to 72 the next day, and ranged after that between 72 and 92.

The respiration on admission was 30, dropped to 22 the next day, and then ranged between 18 and 24.

The patient voided 97 ounces in the first twelve hours and over 86 ounces each of the two following days. We have no reason to believe that this increase in urine output was due to any diuretic effect of the poison, but believe that the diuresis can be well explained by the large quantities of fluid given to the patient.

LABORATORY EXAMINATIONS

Urine	7/23/16	7/25/16	Blood 7/22/16
Specific gravity	1.015	1.025	Red blood cells 4,900,000
Reaction	acid	acid	
Albumin	0	0	Hemoglobin over 100
Sugar	0	0	
Microscopic	Neg.	Neg.	

The treatment consisted in venesection, Murphy drip, oxygen inhalation, forced fluids, cold pack, the administration of rhubarb and soda, and hypodermoclysis. The patient having recovered completely, he was discharged from the hospital, July 26, 1916.

COMMENT

When inhaled in small quantities for a long period, anilin fumes give rise to symptoms of chronic poisoning, and one must always bear this in mind among dye workers, when there is no other explanation for the symptoms. In such cases the sweat may be red or violet. From 10 to 25 gm. is the fatal dose of anilin.

Dr. Merzbach informs me that in a nearby dye factory a provocative test has been practiced on all applicants for employment, and has been found very useful in eliminating those who are particularly susceptible to anilin poisoning. The test consists in making a slight abrasion on the skin of the forearm and rubbing in some anilin. In those who are particularly susceptible to this chemical, symptoms of poisoning rapidly ensue. Such a person is denied employment.

It has also been observed that symptoms of anilin poisoning generally appear after meals; particularly after the noonday meal, the patient will begin to vomit. The question arises, Does the gastric juice liberate the anilin from its various combinations or is the anilin simply then introduced by way of mouth from food, hands, utensils, etc.? This point will have to be cleared up in the future.

Since nitrobenzene poisoning closely simulates anilin poisoning, it is important to bear in mind that in the former instance the breath, vomitus and the excreta of the patient have an odor of bitter almonds (Dr. Merzbach).

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FREQUENCY OF URINATION IN WOMEN *

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A large proportion, perhaps the majority, of women who seek medical advice have some urinary disturbance. It may be of such slight degree, or of so gradual an onset, that the patient is not aware that she is the victim of this particular trouble. In such case the history of the disturbance is elicited only after close questioning. On the other hand, it may be of such severity as to be the prime cause of consulting the physician.

There is ample explanation, on anatomic and physiologic bases, for the frequency of urologic lesions, and the consequent disturbances of urination, in women. When we consider the anatomic situation of the female urinary organs, and the physiologic exigencies of adolescence, of the child-bearing period, and of the menopause, there is little wonder that affections of these organs are so common, so diverse in character, and often so distressing. The sexual organs, so often the seat of lesions or new growths, the rectum and appendix, with rich blood and lymphatic supply for the transmission of infections to the bladder, the urethra, prone to infections and to injury incident to childbirth and pelvic operations, the kidneys, constantly eliminating bacteria supplied by the blood stream and so situated that they directly transmit infections to the bladder, even though not infected themselves, are all factors which may be concerned in the cause of urologic lesions in women, the one most frequent symptom of which is frequency of urination.

From a consideration of the various elements concerned, it is easily concluded that frequency of urination is by no means dependent on lesions primary in the bladder. One can see at a glance, therefore, how futile it is to treat a bladder affection per se, until it has been ascertained that the lesion is primary. One cannot rely on symptoms, which are often most misleading.

The keynote to the study and management of these conditions is a correct diagnosis. This can be made only after a complete history has been taken, a thorough physical examination made, and an inspection of the bladder and urethra, as well as an exploration of the ureters and a separation of the urines from the kidneys, affected. It is often necessary to supplement these measures by a combined cystoscopic and Roentgen examination, outlining the tract.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

The accompanying tables, with the comments, of 1,000 cases of frequency of urination in girls and women which have come under my observation in hospital and private practice, is presented with the hope of stimulating a closer study of these disturbances and the underlying causative factors.

Considering, *ad seriatim*, the nine age periods given in the tables, certain salient features of each will be noted.

First Decade (Table 1, from 1 to 9 years).—Undoubtedly, if the figures had included the pediatric services or children's wards, more than seven cases of frequency of urination in young girls would have been found in a general list of a thousand cases. But the urologist sees these patients, as a rule, in consultation with the family physician or the pediatrician, and, as I have said, is apt to see only the more severe cases. This is doubtless particularly true of cases of enuresis, and perhaps also of cases of frequency associated with gonorrheal vaginitis.

TABLE 1.—CASES IN THE FIRST DECADE

Diagnosis and Etiology	No. of Cases
Enuresis	1
Spina bifida	1
Vaginitis and urethritis (gonorrheal)	3
Pyelonephritis (colon bacillus) single	1
Pyelonephritis (colon bacillus) double	1
Total	7

It will be noted that the colon bacillus makes its appearance in the first group, causing pyelonephritis of one kidney in one case, and of both kidneys in another, this, in turn, giving rise to frequency of urination. We know that such infections accompanying intestinal disorders are common in children, and if we are able to locate a renal lesion, and to improve the urologic condition by local treatment in conjunction with the general measures, such cases may be seen more often by the urologist.

Second Decade (Table 2, from 10 to 19 years).—Of the sixty-one cases belonging to this age group, forty-six had urethritis and trigonitis as the immediate causative factor in urinary frequency. Of these, twenty-nine gave a history of vaginal infection, gonorrheal in character. In seven others, cultures from the upper urinary tract showed the primary focus to be the kidney. In five cases the symptoms appeared following catheterization after operation. In two cases the frequency of urination was undoubtedly associated with urethral hyperemia due to masturbation. In six the urinary disturbance was secondary to colon bacillus infection of the kidney, and in one it followed influenza.

In two of the cases of frequency associated with urethritis and trigonitis, renal calculi were found, and in one renal tuberculosis. The frequency in this case, as in any case of urinary tuberculosis, was not due to the lesions in the kidney, but to the secondary involvement of the bladder. If the kidney is draining, the bladder symptoms (frequency, burning and tenesmus) will appear; otherwise, no bladder symptoms are manifest. In nearly all the cases of renal tuberculosis, a thickened, tender ureter on the affected side was easily palpated through the vaginal wall, and a large percentage revealed stricture of the ureter.

Of the total number of this group (sixty-one), there were only four cases of enuresis—a relatively smaller number than the first group presented.

In five cases the condition was apparently purely neurotic, no urologic lesion being found to explain the bladder irritability. According to Cary,[1] this condition is rarely traceable to a pure neurosis. Repeated examinations of the urine, he asserts, may disclose nephritis or tuberculosis of the kidney as a cause of the frequency. In the cases herewith recorded, no such cause could be found. Whether this condition is a "pure neurosis" or a psychosis must be left for the neurologist to determine. It is for the urologist to exclude absolutely, by the various methods of examination at his command, the possibility of any local factor or factors in the production of this annoying trouble, before he falls back on the diagnosis of last resort.

In the second age group, pressure on the bladder appears as the cause of frequent urination in three cases, the pressure in one being due to pelvic abscess, in two to malpositions of the uterus. It has been asserted that it is doubtful if pressure on the bladder alone causes vesical symptoms, but must be associated with a secondary complication. In all of these cases there was congestion of the urethra and trigon. Pressure caused by stone in the lower ureter may lead to frequency due to a reflex, or it may give rise to cystitis and urethritis, with consequent frequency of urination, two such cases being found in this group.

Cyst of the floor of the bladder was found in one case, causing almost complete obstruction at the outlet of the bladder, and consequent overflow. The cyst was as large as a hen's egg, and projected upward from the floor of the viscus. With the cystoscope, light was transmitted through the cyst. The cyst wall was punctured with the high frequency cautery, and collapsed, whereupon the patient began to void at once. The cyst was entirely destroyed by this means.

Third Decade (Table 3, from 20 to 29 years).—In the third age group, urethritis and trigonitis appear much more frequently, constituting 165 out of a total of 219 cases of this group. While the majority of these cases were secondary to or accompanied a vaginal infection, other patients dated their symptoms from a catheterization after operation; some were secondary to a colon bacillus pyelonephritis and colon bacillus pyelonephritis occurring during pregnancy, and others accompanied syphilis of the kidney and nephritis.

TABLE 2.—CASES IN THE SECOND DECADE

Diagnosis and Etiology	No. of Cases
Urethritis and trigonitis with vaginitis or history of vaginitis (gonorrheal)	29
Urethritis and trigonitis with symptoms since catheterization after operation	5
Urethritis and trigonitis with hyperemia due to masturbation	2
Urethritis and trigonitis from colon bacillus pyelonephritis	6
Urethritis and trigonitis following influenza	1
Enuresis	4
Neuroses	5
Pressure on bladder (pelvic abscess, 1; uterus, 2)	3
Calculus in lower ureter	2
Calculus in kidney, with urethritis and trigonitis	2
Tuberculosis of kidney, with urethritis and cystitis	1
Cyst of bladder, causing obstruction and overflow	1
Total	61

In this connection, the condition of the gastrointestinal tract is of supreme importance, especially the teeth. While, in many cases in which the patient is seen by the urologist in consultation, the general findings of the physical examination are given him by the physician in attendance, I believe it to be the duty of the urologist personally to make his own observa-

1. Cary, W. H.: Bladder Irritability in Women, Am. Jour. Obst., 1915, **71**, 259.

tions. If this were done, an explanation for these annoying infections of the vesical orifice and urethra and sometimes the entire bladder would more often be found, and the patient would be permanently relieved by general and local treatment, rather than by the local applications of the urologist, or the bladder irrigations of the family physician, and perhaps, the gynecologist.

TABLE 3.—CASES IN THE THIRD DECADE

Diagnosis and Etiology		No. of Cases
Urethritis and trigonitis		124
Urethritis and trigonitis from catheterization after operation		7
Congestion at menstruation		4
Urethritis and trigonitis, colon bacillus pyelonephritis		17
Urethritis and trigonitis, colon bacillus pyelonephritis pregnancy		2
Urethritis and trigonitis, with syphilis of kidney		2
Urethritis and trigonitis, with nephritis		3
Urethritis and trigonitis, with stricture of urethra		6
Pressure on bladder:		
Fibroids	2	
Uterus (pregnancy)	3	
Displacements	2	
Pelvic abscess	2	
		9
Tuberculosis of kidney, with urethritis and cystitis		9
Neuroses		9
Prolapsed kidney		4
Prolapsed kidney with pyelonephritis		3
Calculus in ureter		7
Calculus in kidney, with pyelitis		6
Urethritis and trigonitis, with cystocele		3
Urethritis and trigonitis, from tuberculosis of ureter		1
Calculi in bladder		1
Enuresis		1
Traumatic stricture of urethra		1
Total		219

In six cases of this age period, the inflammation in the urethra was sufficiently severe and of such duration as to give rise to stricture. These observations have shown stricture of the urethra in the female to be a common pathologic condition. I have often had patients experience immediate relief after a single dilation of the urethra, while in others it was necessary repeatedly to cauterize the thick, edematous mucous membrane or polypoid growths about the bladder neck, before relief could be obtained.

In three cases the urethritis and trigonitis were associated with cystocele, and in one with tuberculosis of the ureter (the kidney having been removed).

Congestion during menstruation apparently gave rise to frequency of urination in four cases of this group.

Pressure on the bladder was found in nine cases, the pressure being due to fibroids, in two cases; uterus (pregnancy), in three; uterine displacements, in two, and pelvic abscesses, in two.

In nine cases tuberculosis of the kidney, with urethritis and cystitis, gave rise to the urinary disturbance. In four cases there was prolapsed kidney, with intermittent frequency, in three prolapsed kidney with pyelonephritis, and in six calculus of the kidney with pyelonephritis. Calculi in the ureter were found in seven cases, and in the bladder in one.

In nine cases no demonstrable cause could be found other than the general neurotic history of the patient. Organic lesions and local infections were carefully excluded in all of these cases.

Enuresis appeared in only one case of this group, showing a tendency to overcome this condition as age advances, and pointing to the educational management of at least a proportion of these cases.

Fourth Decade (Table 4, from 30 to 39 years).—Urethritis and trigonitis are still conspicuous causes of frequency of urination, as will be seen from the table, though the proportion is somewhat smaller than in the preceding group. The symptoms in seven cases were traceable to catheterization after operation. Colon bacillus kidney infection was found in twenty-five cases of this group, and pyelonephritis associated with infections other than colon bacillus and tuberculosis was found in six cases. Urethritis and trigonitis associated with stricture of the urethra was found in thirteen cases, with cystocele in nine cases, and with calculi in the kidney in seven cases.

Pressure on the bladder was found in a much larger proportion of cases of this group (thirty-two) than in any of the others. The pressure was due to the pregnant uterus in eight cases, to fibroids in three, to pelvic abscess in six, to uterine displacements in eleven, and to ventral fixation in four.

This age group presents the largest number of cases in which no organic lesion or local infection could be found, and in which the frequency could fairly be placed on a neurotic basis.

Calculi in kidney, ureter and bladder are noted in this group. One case of stone in the bladder was particularly interesting in view of the fact that two calculi were found in the center of a growth (papilloma) of the bladder. Four other cases presented papilloma of the bladder as the cause of irritability and frequency of urination.

More cases of prolapse of the kidney were noted in this group than in any other. Of the seventeen cases, eleven were associated with colon bacillus pyelonephritis. The frequency with which infection is found in displaced kidneys tends to confirm the theory that congestion in such an organ predisposes to infection. Polycystic kidneys were found in three cases.

TABLE 4.—CASES IN THE FOURTH DECADE

Diagnosis and Etiology		No. of Cases
Urethritis and trigonitis		116
Urethritis and trigonitis from catheterization after operation		7
Urethritis and trigonitis, traumatic		4
Congestion during menstruation		4
Urethritis and trigonitis from pyelonephritis (colon bacillus)		25
Urethritis and trigonitis from pyelonephritis (not colon bacillus) or tuberculosis		6
Pressure on bladder:		
Pregnant uterus	8	
Fibroids	3	
Pelvic abscess	6	
Displacements	11	
Ventral fixation	4	
		32
Prolapsed kidney		6
Prolapsed kidney with pyelonephritis (colon bacillus)		11
Tuberculosis of kidney with cystitis and urethritis		12
Neuroses		12
Urethritis and trigonitis with cystocele		9
Urethritis and trigonitis with calculi in kidney		7
Calculus in ureter		6
Calculus in bladder		2
Calculus in bladder with growth		2
Relaxation of sphincter		5
Nephritis		5
Urethritis, trigonitis, stricture of urethra		13
Polycystic kidney		3
Urethrovaginal fistula		2
Vesicovaginal fistula		3
Prolapsus uteri		3
Papilloma of bladder		4
Traumatic stricture of urethra		2
Adhesions of bladder		2
Caruncle		2
Oxaluria		3
Chyluria		1
Pyelonephritis, pregnancy		4
Stricture of ureter		2
Total		315

Fistulas and carunculae appear in this group for the first time, as do likewise adhesions of the bladder. Oxaluria was found in three cases, and chyluria in one. The oxaluria was an accompaniment of constipation. The case of chyluria was exceedingly interesting. The urine from one kidney was loaded with chyle, which appeared only during pregnancy and the

early days of lactation. Study of kidney function showed slight deficiency on the affected side. A double pyelo-ureterogram showed no abnormality.

It will be noted from a study of the table that the complications of pregnancy are relatively frequent in this group, which embraces the period of greatest sexual activity.

Fifth Decade (Table 5, from 40 to 49 years).—This entire age group is smaller than the preceding. Urethritis and trigonitis still lead as associated factors, though the number is relatively smaller than in the third and fourth age groups. Pyelonephritis is also less frequent. Catheterization after operation still appears in connection with the initiation of the symptoms of disturbance of urination. Stricture of the urethra is relatively more common in this group, twenty-four cases being associated with urethritis and trigonitis. They serve to show how often these cases of urethritis are allowed to go unrecognized, treated as cystitis, which treatment gives only temporary amelioration of symptoms.

TABLE 5.—CASES IN THE FIFTH DECADE

Diagnosis and Etiology	No. of Cases
Urethritis and trigonitis	54
Urethritis and trigonitis, traumatic	4
Urethritis and trigonitis from catheterization after operation	4
Urethritis and trigonitis, with pyelonephritis	27
Urethritis and trigonitis, with stricture of urethra	24
Pressure on bladder:	
Fibroids	3
Displacements	5
Pelvic abscess	4
Abdominal tumor	2
Ventral fixation	2
—	16
Urethritis and trigonitis with cystocele	27
Prolapsed kidney	4
Prolapsed kidney with pyelonephritis	2
Urethritis and trigonitis, calculus in kidney, pyelonephritis	2
Calculus in ureter	10
Urethritis and trigonitis with stricture of ureter	2
Calculus in bladder	2
Tuberculosis of kidney, cystitis, urethritis	5
Tuberculosis of kidney double	1
Polycystic kidney	2
Hypernephroma	2
Neuroses	8
Relaxed sphincter	4
Vesicovaginal fistula	2
Nephritis	6
Caruncle	3
Prolapsus uteri	4
Cancer of bladder	3
Tabes	1
Papilloma of bladder	3
Total	222

Pressure on the bladder (from fibroids, three; displacements, five; pelvic abscess, four; abdominal tumor, two; ventral fixation, two) was the cause of the frequency in sixteen cases of this group.

Cystocele is found with much greater frequency in this period than in any of the preceding, always associated with urethritis and trigonitis. It is undoubtedly an important factor in predisposing to local infection, in the same manner as the prostate does in the male.

In addition to pyelonephritis (found in twenty-seven cases associated with urethritis and trigonitis), prolapse of the kidney, with and without pyelonephritis, renal tuberculosis, nephritis, polycysts of the kidney, hypernephroma and renal calculi, were observed in this period.

Neurosis was still to be recorded as the only explanation for the frequency of urination, in the absence of organic lesions or local infections.

Cancer of the bladder was found in three cases, and papilloma of the bladder in three.

Sixth Decade (Table 6, from 50 to 59 years).—It will be noted, in substantiation of the theory that frequency of urination is most common during the periods of greatest sexual activity, that the sixth age group is less than half as large as the preceding one. The types of infection of later life are less acute and of longer duration, and the patients are probably less likely to apply for relief. Urethritis and trigonitis still lead as causes, but of these cases the largest proportion yet recorded is associated with cystocele (thirty-four). Prolapsus uteri, and calculi in different portions of the urinary system, are found with relatively greater frequency in this age period. Diabetes makes its appearance for the first time, and here only because of suspected complications, the simple cases being treated by the internist.

TABLE 6.—CASES IN THE SIXTH DECADE

Diagnosis and Etiology	No. of Cases
Urethritis and trigonitis with cystocele	34
Urethritis and trigonitis with pyelonephritis	12
Urethritis and trigonitis (no history of vaginitis)	6
Urethritis and trigonitis with stricture	6
Urethritis and trigonitis from catheterization after operation	3
Relaxed sphincter	4
Calculus in kidney, pyelonephritis	3
Calculi in ureter and bladder	3
Prolapsus uteri	6
Caruncle	4
Nephritis	4
Fibroids	2
Ureterovaginal fistula	3
Papilloma of bladder	3
Prolapsed kidney	2
Carcinoma of bladder	2
Calculi in bladder	2
Diabetes	2
Total	101

The number of cases in which catheterization after operation seemed to inaugurate the symptoms is decreased. Neoplasms (fibroids, papillomas and carcinomas of the bladder) are relatively more common in this group.

Seventh Decade (Table 7, from 60 to 69 years).—Of the thirty-one cases of urethritis and trigonitis in this age group, twenty-four were associated with cystocele. Of these twenty-four cases, four were complicated with diabetes, and three additional cases of cystocele presented vesical calculi. Two cases of diabetes appear in this group. The number of cases of cancer of the bladder is double that of the last age group. It will be noted that the total number, again, is decreased by about one half of the preceding group.

TABLE 7.—CASES IN THE SEVENTH DECADE

Diagnosis and Etiology	No. of Cases
Urethritis and trigonitis with cystocele	20
Urethritis and trigonitis with cystocele and diabetes	4
Urethritis and trigonitis with pyelonephritis	5
Urethritis and trigonitis with pyonephrosis and calculus in kidney	2
Cancer of bladder	4
Nephritis	5
Calculi in bladder, cystitis and cystocele	3
Fibroids	3
Caruncle	2
Urethral stricture	2
Calculus in ureter	1
Diabetes	2
Total	53

Eighth Decade (Table 8, from 70 to 79 years).—Here we find a marked drop in the total number of cases, this group containing only one third of the number found in the preceding group. Urethritis and trigonitis, as in the preceding groups, outnumber other conditions, and cystocele is still found to complicate the majority of these. Cancer of the bladder is rela-

tively much more frequent, and diabetes and procidentia are still to be noted.

Ninth Decade (Table 9, from 80 to 89 years).—Of the four cases (less than one fourth of the total of the preceding group) found in this period, three are associated with cystocele and one with procidentia.

From the foregoing tables it will be seen that frequency of urination is least common in the extremes of life, or during those periods when the so-called

TABLE 8.—CASES IN THE EIGHTH DECADE

Diagnosis and Etiology	No. of Cases
Urethritis and trigonitis with cystocele	6
Urethritis calculi in bladder and kidney	1
Cancer of bladder	3
Calculus in kidney	3
Tumor of kidney	1
Diabetes	2
Prolapsus uteri	2
Total	18

physiologic exigencies associated with the sexual function have not been established, on the one hand, and have ceased, on the other. The three decades (20 to 29, 30 to 39, and 40 to 49, inclusive), which embrace the years of active sexual life and the child-bearing period, present the largest proportion of cases, the largest of all occurring in the decade between 30 and 39, inclusive.

It is but fair to assume, however, that if the subject were differently approached, a larger proportion of cases of frequency of urination in women would be found in all the age periods. Unfortunately, the urologist, within whose province such cases properly fall, is apt to see only the more extreme cases; and those of less severity are often overlooked by the pediatrician, the gynecologist, the neurologist, or the other specialist, as well as the general practitioner, whose interest in a given case is generally directed particularly to other conditions.

CONCLUSIONS

1. The study of the 1,000 cases recorded herewith confirms the hypothesis that frequency of urination in women is one of the most common symptoms of disturbance of the urinary system.

2. A closer association of the urologist with the pediatrician, the gynecologist, the neurologist, the internist and perhaps the geriatrist, would doubtless lead to the discovery of many more cases of frequency of urination in women and accompanying lesions than at present find their way into the records, either of the clinics or of the libraries.

TABLE 9.—CASES IN THE NINTH DECADE

Diagnosis and Etiology	No. of Cases
Urethritis, cystocele	2
Cystocele, pyonephrosis	1
Procidentia	1
Total	4

3. Lesions of the urinary system in women are primarily a concomitant complication or sequel of the sexual and child-bearing functions, secondarily of the sedentary life.

4. Urinary frequency during the earlier age periods is associated with acute infections much more frequently than in the later periods, which infections, in a large proportion of cases, are localized in the urethra and trigon, and which if not properly treated go on to stricture formation. These are cases which, in the past, have been treated as cystitis.

5. Tuberculosis is not found in the first age period, nor is it found in the last four age periods.

6. Intermittent attacks of vesical irritability are of common occurrence, accompanying colon bacillus pyelonephritis.

7. The relatively common occurrence of frequency of urination following postoperative catheterization forces the conclusion that this procedure, as commonly practiced in hospitals and dispensaries, calls for radical improvement, both as to technic and as to instruments employed.

8. Calculi are comparatively common, in the ureter in young adults, in the kidney and bladder in those of advanced ages. In the former, acute attacks of colic occur; in the latter, mild symptoms, or those of the accompanying infection, are present. Fewer operations for acute appendicitis are being performed. More calculi are being assisted in their passage, or are being removed.

9. Prolapsed kidney, with disturbed drainage and congestion, must be acknowledged to be a predisposing factor in kidney lesions.

10. Urinary complications are common during the period of gestation.

11. It may be stated, in a general way, that the findings in these cases with reference to the occurrence of cancer are not at variance with the commonly accepted views regarding the age incidence of malignant growths.

TABLE 10.—SUMMARY

	No. of Cases
Table 1, from 1 to 9 years	7
Table 2, from 10 to 19 years	61
Table 3, from 20 to 29 years	219
Table 4, from 30 to 39 years	315
Table 5, from 40 to 49 years	222
Table 6, from 50 to 59 years	101
Table 7, from 60 to 69 years	53
Table 8, from 70 to 79 years	18
Table 9, from 80 to 89 years	4
Total	1,000

12. The frequent occurrence of cystocele in connection with frequency of urination in women past the meridian of life suggests that this condition, in women, with the residual urine subject to infection, may be the analogue of the enlarged prostate, with its urinary disturbances, in the male.

40 East Forty-First Street.

ABSTRACT OF DISCUSSION

DR. JOHN R. CAULK, St. Louis: Frequency of urination in women is unquestionably very common. There are several types other than the frequencies due to vesical lesions complicating upper urinary tract infections, etc. A frequent type is due to changes around the internal orifice, which may or may not be associated with pelvic disease, such as villous formations and proliferations, so commonly seen in middle aged women, causing slight obstruction and frequency of urination. This type can be rectified by dilatation, burning, etc., and most of them will respond promptly just as in the male. Then there is the other type of intermittent retention, with more or less frequency of urination in the intermittent periods, namely fibroids, papillomas, ureterovesical cysts, etc. This class of cases seen frequently in young women who have been stamped as neurasthenics and hysterics we must be careful about. Urologists who use the cystoscope do not make such mistakes very often but it is the commonest mistake for the general practitioner to make. These patients almost always have gone for years as neurasthenics. I recognize that there is a neurotic bladder, but we have to be very careful in eliminating every factor before diagnosing a neurotic bladder, because so many of these cases are due to pathologic conditions at the vesical neck. The most com-

mon type of frequency of urination which I see is the type which Dr. Bugbee has found so commonly in his series, that is, the one due to trigonitis and urethritis, and it is one so terrifically neglected. The urine is frequently clear and corresponds to chronic prostatic and verumontanum trouble in the male. All of these women, provided they have nothing gross in the way of a calculus, etc., have the typical trigonal pictures described by Kolischer, Garceau, and others. There are various types of trigonal disease, the type of bullous edema, the peculiar proliferative type of granular white deposit which one sees so frequently around one of the ureteral orifices; again the strawberry type, which is more common in the midtrigonal section, with a blushing internal sphincter. These are all very common, and all have associated with them urethral lesions which, as Dr. Bugbee says, promptly respond if investigated properly and treated. I was surprised that he found so many strictures of the urethra. Recently I have seen two cases, but I had no idea they were so common. It shows we cannot get results unless we investigate the urethras and the bladders in all urinary disorders.

DR. IRVIN S. KOLL, Chicago: Despite this very excellent collection of causes for the frequency of urination in women that Dr. Bugbee has given us, I find in my experience one large group that he has scarcely touched on and which Dr. Caulk barely mentioned, and that is the cases in which you find absolutely nothing in the bladder and nothing anatomically wrong but a hyperacidity of the urine—simply a very highly acid urine. By the administration of alkalies these patients are relieved of the frequency of urination. A lady came to me with a bottle of urine and said there was a lot of blood in it. She had an enormous deposit of brick-dust urates, and after giving her a large quantity of alkali she came back and said the blood had turned to pus, but that she was not urinating so frequently. She had a strongly alkaline urine, though there was no frequency of urination. I thought I would try and see what I could do by making the urine acid again. I gave her sodium benzoate. She came back in a few days urinating very frequently again. When these cases go on for a long time cystoscopically they will show a trigonitis. My experience is that it is simply due to the irritation of the urine. These cases are hard to manage; in spite of the fact that you alkalinize the urine, if you do not relieve the trigonitis they will continue their frequency. I would like to know what to do. I have done everything I know, made topical application to the neck of the bladder with silver nitrate, and many times I get no results.

DR. A. W. NELSON, Cincinnati: I was rather surprised to hear the report of so many cases of stricture of the female urethra. I have seen quite a number of cases of stricture of the female urethra, but was many times tempted to doubt my diagnosis. This was the result of reference to medical literature, which tells us that stricture of the female urethra is a rarity. Therefore, finding a number of cases of this affection I felt that either my diagnosis was wrong or that medical literature was far from being correct. As to urethral caruncle, experience contradicts the usual teaching that urethral caruncle is a common cause of urinary disturbances, in a broad sense of the word, particularly of pollakiuria. As to hyperacidity of the urine being a cause of frequency of urination, I have noticed pollakiuria, in women, to occur a few days before the menstrual period and disappear shortly after the onset or immediately after the termination of menstruation. Therapeutically my experience in treating such cases with sodium bicarbonate was as favorable as that of Dr. Koll. I treated the symptom, as physical examinations always failed to reveal anything pathologic. Probably such frequency is the result of metabolic disturbance.

DR. THEODORE BAKER, Pittsburgh: One striking fact brought out in this paper on frequency of urination is the absence of a single case classified as primary cystitis. Papers like this are of the utmost value in teaching the general practitioner that the diagnosis of cystitis is absolutely wrong, that cystitis is only a symptom. There is always a cause back of these cases. The treatment of frequency of urination by soda seems to me to be only a palliative measure when the urine is acid, and indicates nothing of value. Another interesting point in the paper is the diagnosis of neurosis in thirty-four cases. None was reported as occurring after the fifth decade, the majority of them being in the fourth decade. We should look with extreme suspicion on the diagnosis of a neurosis; because we cannot find any pathologic lesion I think we should be very careful about calling it a pure neurosis. I want to call attention to syphilis as a cause of urinary disturbance. A year ago I saw a woman who had been having the utmost difficulty for five years in spite of all treatment. I treated her for several weeks for a trigonitis with no relief; and it was only after the appearance of a suspicious looking macule that I commenced antisyphilitic treatment, and she finally got well on this alone. The Wassermann reaction was positive. In looking over the literature I was able to find only thirty-seven cases reported to date, and of these twenty-four have been reported since 1902. Margoulies in 1902 and Englemann in 1904 each reported a case of papilloma of the bladder which was at first thought to be malignant, but both patients recovered completely on antisyphilitic treatment. I mention this because it has not been spoken of before, and because the literature on the subject is yet rather scanty.

DR. ARTHUR B. CECIL, Los Angeles: It is the so-called neuroses in which we are interested. The gross causes of frequency of urination we all recognize, but when we speak of "frequency" in women it brings to the urologist's mind that type of case in which we are absolutely unable to find anything the matter with the patient. We do not see this type of case among men. It would seem that, perhaps, there may be in women a hypersensibility, where even normal urine under slight pressure will produce the desire to urinate.

DR. F. R. CHARLTON, Indianapolis: I presented in St. Louis a series of cystoscopic views in color, at least hoping that the discussion might bear out my claim that the condition had been hitherto undescribed and yet was a definite clinical entity. Those pictures presented a type of bullous edema that was not confined to the trigon or the neck of the bladder at all. It was found quite as often in the upper as in the lower portion of the bladder. It appeared after middle life. It ran an essentially chronic course. I have not lived long enough to follow all these histories into old age, but I have followed some of them as long as eight or ten years. These cases will be found to appear soon after middle life, and in recurring cycles will appear in advanced age. The same lesion that I described in the bladder is to be found invariably in the vagina and in the rectum. I am not so sure but what if an investigation were carried on, the same lesion would not be found in mucous membranes elsewhere, and I look on it as a senile change, for some unaccountable reason locating itself in the pelvic mucous membranes. This particular condition I do not believe Dr. Bugbee included in his lists. Whether it is going to merit such consideration as I claim remains to be seen. It is not considered anywhere in the literature. Dr. Caulk made a remark which struck in me a responsive chord. It is to the shame of genito-urinary specialists all over the country that they have permitted their practices to narrow down to work with men and often enough almost exclusively to venereal diseases. That is our fault. There is no reason why we should not be seeing the women and the babies in larger proportion and so lending added interest and scientific dignity to our field of work.

DR. JAMES A. GARDNER, Buffalo: I wish again to congratulate Dr. Bugbee on his paper, because I believe such papers as this cause the urologist to think. We learn as much probably from our mistakes as we do from our achievements. One of the men spoke of neuroses of the bladder. Most of those cases are called neuroses because we are faulty in our diagnosis; we are not able to find out just where the trouble lies. I wish to cite two cases. One of them was looked over by myself, a competent neurologist and a couple of gynecologists. This woman gave nothing but symptoms of frequency and apparently trouble in the urinary tract. She was all right at night and when lying down, but as soon as she got up she would have frequency. There was never any pus or anything pathologic in the urine. The gynecologists found a small fibroid tumor on the front of the uterus, which when she stood erect fell over against the bladder and caused the frequency. She had been called neurotic and everything else. The other case was also one of those neurotic women who had been everywhere. I saw her about three or four

months ago. She had been examined by a number of men. We went over her urinary tract carefully, but could find nothing. A number of gynecologists had looked her over and reported negatively. After we had seen her another gynecologist examined her standing and found a large rectocele. After that was operated on she had no more urinary symptoms. I believe in women we are more apt to err and call them neurotic because we are faulty in our diagnosis.

DR. FREDERICK W. ROBBINS, Detroit: I would like to ask Dr. Bugbee how he decides that these women have stricture of the urethra? It seems to me that when you have this condition present of which he speaks and pass a sound once or twice, curing the patient, that is sufficient proof that the patient has no urethral stricture but a pathologic condition usually inflammatory, often located under the vesical spincter. Such cases are often cured by passing a sound once or twice, but a true stricture, never.

DR. H. J. SCHERCK, St. Louis: There is one class of frequency of urination in women of which I have seen quite a few, and that is the postoperative frequency of urination following certain gynecologic operations. I have in the last year or two seen a few such in which the Wertheim operation for prolapse was done, which has so pushed the bladder forward that the women are suffering from frequency of urination. Usually these cases show a trigonitis on cystoscopy. I have seen a case or two in which after suspension of the uterus the bladder capacity was limited by the operation and the frequency and bladder symptoms persisted in spite of treatment, so that it is important to bear in mind that certain gynecologic operations which limit the bladder expansion are sometimes the cause of a frequent desire to urinate.

DR. HENRY G. BUGBEE, New York: I was well aware that the question of stricture of the urethra would come up, because it was quite as surprising to me to find so many cases in women as it has been to many of you. For the past three years I have had the opportunity to see all of the urologic cases, or those presenting urologic symptoms, at the Woman's Hospital in New York, and I have seen a large number of cases complicating gynecologic infections and lesions. In these cases of stricture I have only included those in which it was difficult to pass an 18 French dilator. I have not taken up the question of cure at all, and I do not think I made the statement that any of the cases of stricture were cured by the single passage of a sound. I did say that they experienced relief; that relief, of course, was only temporary, and the treatment had to be carried on. I could not go into every detail of the lesions found in these cases; it would have made the paper too extensive; I have only tried to mention the principal pathologic lesions which accounted for the symptoms. As regards the question of neuroses: In these cases we have made a careful examination of the entire urinary tract, gone over the physical findings, and we thought that we could not find any one lesion which accounted for this frequency of urination. Occasionally we find these cases of hyperacidity that are relieved and improved by the administration of the alkalies. It would seem that those cases came rather under the head of neuroses than as an entity.

Tuberculous Hemoptysis.—G. A. Alfaro, professor of semiology at the University of Buenos Aires, in the *Prensa Medica Argentina*, 1916, **3**, 2, declares that physicians who have had the widest experience with tuberculosis have noted that the larger proportion of cures or of long survivals have been in persons who have had repeated and profuse hemorrhage from the lungs, much more than in those who never presented hemoptysis. He cites Andral's patient who had profuse hemoptysis from his twentieth to his eightieth year, dying then from an intercurrent affection. He calls the hemorrhage, which occurs as the first manifest sign of trouble, providential hemoptysis, as its warning is promptly heeded. With this type, there is no fever, the appetite is good, and after the patient and family have recovered from their fright, only the positive tuberculin reactions show that anything is wrong. As long as there is fever, the hemorrhage is liable to recur. The peripheral blood pressure may be high, with hemoptysis, but, perhaps in the majority of cases, it is normal or even below.

INTRAVENOUS INJECTIONS OF COLLOIDAL SOLUTIONS OF ACACIA IN HEMORRHAGE

PRELIMINARY NOTE *

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It has been a frequent observation among clinicians and laboratory workers that transfusion of blood is a better form of treatment for acute or prolonged hemorrhage and shock than any other mode of therapy. As a result of such treatment, the blood pressure is usually raised, it is better sustained, and the general improvement which results surpasses that obtained by the use of fluids other than blood. And apart from the value of blood in combating the dangerous anemia which may bring about an impairment of nutrition of the vital physiologic centers essential for the maintenance of a normal blood pressure, blood possesses certain colloidal properties to which its great efficacy may be in large measure attributed. Regarded from this point of view the value of blood transfusion is more or less independent of its action on the vasomotor center. By virtue of its colloidal nature, blood exerts a mechanical effect in raising the blood pressure by filling the vascular system with a slowly diffusible fluid. By doing so it improves the action of the heart, and tides the patient over a very critical period.

On the other hand, the experimental and clinical observations of Crile[1] and other workers have shown that the use of saline solution is not as efficacious as whole blood in the treatment of hemorrhage. The reason is clear. Because of the noncolloidal character of salt solutions they pass rapidly out of the vascular system of the recipient, and the rise in blood pressure which follows such infusions, although at times rapid, is as a rule only transitory.

Working, then, on the basis that the symptoms of acute or prolonged hemorrhage are due in great measure to a diminution in the volume of circulating blood, clinicians have given much thought to the problem of finding other fluids which, in the absence of blood, might serve as suitable substitutes. The results of such studies have brought forth some interesting facts concerning the manner in which the volume of the blood is regulated under normal and pathologic conditions, and the rôle which colloidal fluids play in this process. It is fair to say that every detail of the regulatory mechanism involved in maintaining the volume of the blood constant is not yet clear, but considerable knowledge of some of the underlying principles has been gained from the recent investigations of Bogart, Underhill and Mendel,[2] and from the studies of Fischer[3] on the physiologic importance of colloids in the body processes. The experiments of Bogart, Underhill and Mendel have shown that the regulation of blood volume in normal animals is rapid and effi-

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* Read before the San Francisco County Medical Society, Nov. 14, 1916.

* From the Surgical Clinic and the George Williams Hooper Foundation for Medical Research, the University of California Medical School.

* An experimental study of the effect of intravenous injections of acacia solutions on blood pressure, pressure pulse, blood volume and urinary secretion is now being carried out in collaboration with Dr. S. T. Pope and Dr. A. C. Eaton of the surgical clinic. The detailed results of these observations will be recorded in a later paper.

1. Crile, G. W.: Hemorrhage and Transfusion, New York, D. Appleton & Co., 1909.

2. Bogart, L. J.; Underhill, F. P., and Mendel, L. B.: Am. Jour. Physiol., **41**, 219.

3. Fischer, M. H., and Hogan, J. J.: Kolloid-chemische Beihefte, 1912, **3**, 385.

cient, and that tissue absorption rather than kidney activity plays the major rôle in this mechanism. The observation which interests us most in this connection is the influence which colloidal solutions exert on the rapidity of return of an altered blood volume to a normal state. Following the injection of colloidal gelatin solutions, they have found a considerable delay in the restoration of the blood volume to normal; that is, the regulation is less efficient. Their results may, then, be interpreted to mean that a fluid in combination with a colloid is not so readily absorbed by the cellular membranes as is a solution not so combined; whereas the injection of saline solutions is followed by a rapid tissue absorption which results in a reduction of the total bulk of circulating fluid.

Fischer and Hogan have come essentially to the same conclusions. They, however, are inclined to place greater emphasis on the secretory activity of the kidneys in the regulation of blood volume. According to their views, colloidal solutions exert their beneficial effects in maintaining the blood volume in a little different way. They have shown that water in a "bound" state, that is, in colloidal combination, is not readily secreted by the renal epithelium, whereas "free" water, such as saline, escapes with rapidity from the blood vessels, and is secreted by the kidneys.

Without entering into a discussion concerning the relative importance of tissue absorption, and of kidney activity in the maintenance of a normal blood volume, the conclusion is justified that fluid introduced in colloidal combination leaves the vascular system more slowly than "free" fluid.

About a year ago, Hogan[4] emphasized the great practical application of this point by calling attention to the fact that intravenous injections of colloidal gelatin solutions are not diuretic, and that their introduction into the circulting stream results in a higher and in a more sustained blood pressure. Our attention was directed to this problem several months ago in connection with some unpublished experiments on plasmaphaeresis. During the course of this study we found that repeated bleedings followed by the injection intravenously of a suspension of red blood corpuscles in Locke's solution[5] could not be carried out more than two or three times without a great drop in the animal's blood pressure, which was frequently fatal. On the other hand, similar injections of corpuscles in Locke's solution containing acacia gum (gum arabic) were not accompanied by such a striking lowering of the pressure, and permitted a more frequent repetition of the injections. This observation suggested to us the use of an acacia-Locke solution therapeutically in man and in animals for the purpose of combating the immediate mechanical ill effects of lowered pressure following excessive hemorrhage. Such a solution is especially to be recommended for this purpose because of the ease with which it can be prepared and sterilized, and because of its apparent nontoxicity even in quantities approximating the total blood volume of an animal.

For the preparation of the solution we employed the acacia commonly used by pharmacists for emulsions and emollient mixtures. As is well known, this is an amorphous substance which dissolves slowly in water, forming a thick, transparent mucilage of acid reaction. Acacia gum is chemically composed of carbon, hydrogen and oxygen. For a long time most of the gums were classified as carbohydrates, but the researches of O'Sullivan[6] have shown that gum acacia is an acid of high molecular weight, composed of an acid nucleus to which are attached a number of different carbohydrate radicals. The better kinds of gum acacia do not reduce Fehling's solution,[7] a red precipitate being due to the presence of small quantities of a reducing sugar or of dextrin, which exists in certain inferior varieties of the gum.

In practice, we have found it best to use an approximately 5 per cent. acacia-Locke solution. This gives a fluid the viscosity of which is about 2.2, approximating closely to the viscosity of blood plasma (from 1.7 to 2.0). Subsequent observations may indicate the desirability of using slightly lower or slightly higher percentages of acacia.

Locke's solution is to be preferred to ordinary saline for intravenous use because its substitution for salt solution in the treatment of hemorrhage and shock has given better results in the hands of some clinicians, and further because its slight alkalinity is sufficient to offset the acidity of the acacia, thereby yielding a fluid which is neutral to litmus.

The acacia goes into solution with some difficulty. Solution, however, is facilitated by stirring and shaking. The fluid is now filtered through heavy filter paper, either on an ordinary funnel or with the aid of suction, and is then immediately sterilized in the autoclave in the manner customary for the sterilization of salt solutions. Sterilization of the acacia solution should be carried out as soon as possible after its preparation, so as to give rise to minimal bacterial contamination.

Some preliminary experiments on animals together with the employment of the acacia solutions in a number of patients following hemorrhage have convinced us of the value of this solution in combating lowered blood pressure due to depletion of the circulating fluid. Following shortly on a rapid hemorrhage in dogs with a loss of blood amounting to from one half to one third of the blood volume, the injection of acacia solution in moderate amounts will at once produce a striking elevation of the pressure. In one instance, the blood pressure rose from a level of 30 mm. of mercury, to which it had fallen after rapid hemorrhage, to its initial level of 110 mm. of mercury within ten minutes, and in spite of further smaller hemorrhages continued at a high level for a period over one hour and thirty minutes. The good effects resulting from the reestablishment of a normal blood volume and a more nearly normal pressure were noticeable also in an increased fulness of the peripheral vessels, in a rise in the pressure pulse, and in a more forcible heart beat.

Equal success has attended the use of acacia solutions following the hemorrhage and shock observed in a limited number of patients. In the treatment of hemorrhage in man, it should be emphasized that in the employment of colloidal solutions the same rules should be observed which hold in case of the introduction of saline solution intravenously. The infusion of the acacia solution should be given as soon as possible after the onset of hemorrhage and before suffi-

4. Hogan, J. J.: The Intravenous Use of Colloidal (Gelatin) Solutions in Shock, THE JOURNAL A. M. A., Feb. 27, 1915, p. 721.

5. Locke's solution is a solution of sodium chlorid, 0.9 gm.; potassium chlorid, 0.042 gm.; calcium chlorid, 0.024 gm.; sodium bicarbonate, 0.03 gm.; glucose, 0.1 gm., and distilled water, a sufficient quantity to make 100 c.c.

6. O'Sullivan, quoted by Thorpe, Edward: A Dictionary of Applied Chemistry, London, Longmans, Green & Co., 1912, **3**, 21.

7. Allen, A. H.: Commercial Organic Analysis, Philadelphia, P. Blakiston's Son & Co., 1912, **1**, 440.

cient time has elapsed for exhaustion of the vasomotor center and for cardiac failure. Furthermore, in order to avoid embarrassment of the heart's action and fatal dilatation, the fluid should be introduced at a moderate rate and in not too large quantities. It need hardly be added, moreover, that all other useful measures recommended in the treatment of hemorrhage should also be employed.

The principles underlying the value of acacia solutions in the treatment of hemorrhage are, then, the same as those given for other colloidal solutions. The advantages which may be claimed for this particular substance over those previously recommended are its nonprotein and noncarbohydrate character, as well as the simplicity of preparing and of sterilizing fluids which contain it.

THE TREATMENT OF HODGKIN'S DISEASE *

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AND
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In the past three years we have had under observation eighteen cases of Hodgkin's disease. In reviewing these cases an attempt will be made to present the results thus far obtained by the various methods of treatment. We shall also point out some of the clinical phases of the disease which have a bearing on the treatment. The diagnosis of each case was established by microscopic examination. The cases were all fully developed with lesions generalized throughout the body.

Although the claims of a specific diphtheroid organism as the cause of this disease as advanced by Negri and Mieremet,[1] and Bunting and Yates[2] have been disproved by Torrey,[3] still the clinical evidences accumulated in the study of our cases, as from many other sources, point to the infectious origin of the disease and are in accord with the general opinion that the lesions are infectious granulomas. The first symptom noticed by most of our patients was involvement of the cervical glands. Tonsillitis or other pathologic conditions of the tonsils did not appear to be a frequent factor of the disease in this series. No case in the series gave a history of tonsillitis immediately preceding or after the onset of the disease. In none of the cases had tonsillectomies been performed. However, the absence of signs of pathologic lesions in the tonsils does not exclude the possibility that pathogenic bacteria had been carried through the tonsils to the lymphatic glands of the neck.

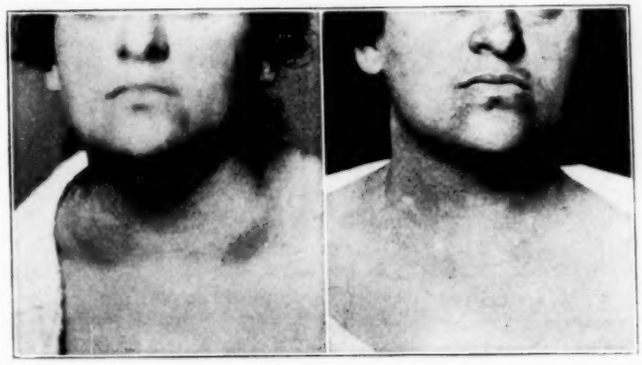


Fig. 1.—Case of Hodgkin's disease, before and after treatment: Twenty-three massive treatments with Roentgen deep therapy, 30 X (Kienböck) to each area, filtered through 4 mm. of aluminum; total, 690 X (Kienböck). Areas treated: both sides of neck; both groins; mediastina, anterior, posterior and lateral; axillae. Treatment began, March 21, 1916. Last treatment, July 11, 1916. Patient improved, but ultimately relapsed and died.

The first symptoms noticed by these patients were enlargement of the cervical glands, usually on one side, and pruritus of the extremities. Enlargement of glands is the most important symptom. We are of the opinion that pruritus is an important early symptom of Hodgkin's disease, and in cases of persistent pruritus, especially of the extremities, aggravated by perspiration, the possibility of Hodgkin's disease should be more generally considered by practitioners. From a therapeutic point of view an enlarged gland is the most important symptom, as by excision and microscopic examination an immediate diagnosis of the nature of the disease may enable us to save life in an early case of Hodgkin's disease. It is all important, therefore, to remove the enlarged glands for microscopic examination and in toto if the case is seen early when the lesion is localized. If we are to wait for other symptoms to manifest themselves, such as general enlargement of the glands, enlarged spleen or liver, anemia and fever, the patient is then beyond help and the prognosis is bad.

The differential diagnosis from lymphatic leukemia, lymphosarcoma, thymoma and other adenopathies of the lymphatic system depends on the microscopic examination of the blood and excised tissues. Clinically it was noticeable in our series that although the cases were all well advanced, the enlarged glands in Hodgkin's disease did not occur as such prominent tumor masses as they did in the other conditions mentioned; the disease tends to extend generally throughout the lymphatic system without localizing in initial large prominent tumor masses. This is well shown in the accompanying illustrations. Some of the clinical differences in Hodgkin's disease and lymphosarcoma of the neck are pointed out in parallel columns.

Seven patients were males; eleven patients, females; the ages varied from 6 to 56 years. All but one of the patients had primary enlargement of the nodes in one side of the neck and the mediastinum. One patient had a positive Wassermann reaction. The pathologic report in this case was "atypical Hodgkin's disease."

CLINICAL DIFFERENCES

Hodgkin's Disease	Lymphosarcoma
No macroscopic involvement of tonsil	Macroscopic evidence of growth in tonsil
Lymphatic swellings in neck tend to be isolated, not adherent to deeper structures or skin, softer in consistence, and tumor masses are less prominent	Lymphatic swellings firm, hard, and adherent to deeper structures. Skin distended and adherent over tumor
Death occurs late	Death occurs early
General and constitutional symptoms, such as anemia, loss of weight and appetite, develop early in the disease	General and constitutional symptoms develop late in the disease

* From the Memorial Hospital.

1. De Negri, Ernestine, and Mieremet, C. W. G.: Zur Aetiologie des malignen Granuloms, Centralbl. f. Bakteriol., orig., 1913, **68**, 292.
2. Bunting and Yates: Bull. Johns Hopkins Hosp., 1915, **26**, 376.
3. Torrey, J. C.: Bacteria Associated with Certain Types of Abnormal Lymph Glands, Jour. Med. Research, 1916, **34**, 65.

The patient was given antisyphilitic treatment as well as roentgenotherapy, and is now symptomatically well, for which reasons it might appear that this case was really syphilis. The rapid recurrence, however, of the tumor in the scar immediately after operation would argue strongly against syphilis and in favor of the diagnosis of Hodgkin's disease. Eight patients had enlarged nodes on both sides of the neck. In seven cases both axillae were involved. In six both groins were involved. None of the patients had any history or any evidences of tuberculosis or other definite infections except the single patient who had a positive Wassermann reaction. The initial symptom in two of the cases in which we got our best results was pruritus of the arms and legs aggravated by perspiration, which symptom was treated over extended periods by general practitioners, internists and dermatologists before the true diagnosis was recognized. These two patients were particularly intelligent, and emphasized this initial symptom. Eight patients were operated on from one to five times. All these patients had rapid occurrences and extension of the disease generally. In most of our cases we were able to demonstrate typical lesions of the mediastinal glands by means of the Roentgen rays. If this method were employed as a routine measure, patients would be spared many useless operations, because lesions inaccessible to the knife could be shown. Four patients were treated with mixed toxins; all these patients failed to show improvement and so were transferred to Roentgen treatment, under which they showed rapid regression of their symptoms and general improvement in health.

One patient was treated with ten intravenous injections of vaccine made from one of the excised nodes. The patient had simultaneous Roentgen treatments also over certain nodes. These nodes promptly diminished in size, while the nodes which were not treated with the Roentgen ray did not diminish in size. This proves that the vaccine did not have a constitutional action and that the improvement was due to the Roentgen ray and not to the vaccine. Two patients were treated with serum from a sheep immunized against *Bacillus hodgkinii*. One developed severe pain in the abdomen, without improvement; the other developed urticaria with improvement; the serum was discontinued, and Roentgen treatment instituted. One patient was improved by radium treatment but the case was too far advanced to permit a permanent result. We have every reason to believe that radium will produce fully as good results as the Roentgen rays in Hodgkin's disease. It is too soon to say

Fig. 2.—Case of lymphatic leukemia, before and after treatment: Thirty-two massive treatments with Roentgen deep therapy, 30 X (Kienböck) to each area, filtered through 4 mm. of aluminum. Total, 1,430 X (Kienböck). Areas treated: both sides of neck; both axillae; both groins; mediastina from all sides; abdominal lymph nodes. Treatment begun, March 19, 1915. All palpable nodules disappeared after 655 X (Kienböck) were administered. Leukocytes dropped from 164,000 to 44,000. Patient became symptomatically well. Last treatment, Dec. 28, 1915. Patient died, Jan. 11, 1916, of exhaustion, terminal illness one week in duration. Patient complained of a sense of pressure about the breast. No necropsy.

SERIES OF CASES OF HODGKIN'S DISEASE

Case No.	Age, Yrs.	Sex*	Duration	Locust†	Initial Symptom‡	Treatment§			Results	Present Status	Roentgen-Ray Units; Kienböck	Remarks
						Previous Operations	Roentgen Ray	Other¶				
1	23	♀	5 yrs.	1, 2, 3, 4, 5	a	5	...	Vaccine	Improved	Dead	1,200 X	Nodes which were rayed disappeared
2	55	♀	2½ yrs.	1, 3	a	2	...	Toxins	Improved	?	540 X	One year after treatment, patient symptom free; present condition unknown
3	19	♂	? yrs.	1, 2, 3, 4, 5	a	1	...	.....	Improved	D. T.	150 X	
4	29	♂	4 mos.	1	a	1	...	Antisyphilitic	Symptom free	Symptom free	360 X	
5	41	♀	1 yr.	1, 2, 3, 4, 5	a	1	...	Radium	.....	Dead	240 Millicurie hours	
6	23	♂	1 yr.	1, 3	a	...	...	Toxins	Improved	U. T.	1,020 X	Did not improve under mixed toxins
7	27	♀	4 mos.	1, 3	a	...	...	.....	Improved	?	210 X	Symptom free; returned to Europe; no subsequent reports
8	42	♂	8 mos.	1, 2, 3	a	...	...	Serum	Improved	Dead	2,130 X	Reacted severely after serum
9	7	♂	1 yr.	1, 3	a	2	...	.....	Unimproved	D. T.	540 X	
10	42	♀	8 mos.	1, 3	a	...	X	Toxins	Improved	.....	570 X	Did not improve under mixed toxins
11	9	♀	6 mos.	1, 3	a	1	X	.....	Unimproved	D. T.	150 X	
12	22	♀	1 yr.	1, 3	a	1	X	.....	Unimproved	D. T.	180 X	
13	26	♀	2 yrs.	1, 2, 3, 4	Pruritus	1	X	Serum	Improved	U. T.	2,670 X	
14	6	♂	8 mos.	1, 3	a	...	X	.....	Improved	U. T.	102 X	
15	56	♂	2½ yrs.	1, 2, 3, 4	a	...	X	Toxins	Improved	Dead	660 X	Did not improve under mixed toxins
16	27	♀	10 weeks	1, 3	a	...	X	.....	Improved	U. T.	570 X	
17	27	♀	18 mos.	1, 3	a	...	X	.....	Improved	U. T.	570 X	Was treated with Roentgen rays from a gas tube for 18 months in another institution without improvement; with Coolidge tube showed rapid improvement
18	35	♀	3 yrs.	1, 2, 3, 4	Pruritus	...	X	.....	Symptom free; improved	U. T.	2,730 X	
Totals						8	17	.....	.....	.....	.....	4 patients died

* In this column ♂ indicates male and ♀ female.

† The numbers refer to the regions of the body in which lesions were present: 1, neck; 2, axillae; 3, mediastinum; 4, groins; 5, spleen and liver.

‡ The letter "a" means enlarged glands.

§ The numerals refer to the number of operations performed previous to Roentgen treatment; "X" means massive roentgenotherapy.

¶ Treatments other than surgery or Roentgen ray.

‖ In this column, "D. T." means discontinued treatment, and "U. T." still under treatment.

whether or not the results from radium will be any more lasting than those of the Roentgen rays. Fourteen of the eighteen patients were treated with the Roentgen rays alone with rapid retrogression of the tumors and general constitutional symptoms in all cases. Three patients discontinued treatment before results could be noted. Two patients, symptomatically well, are kept under observation and given prophylactic Roentgen treatment once a month; thirteen were improved; six are dead; eight are still under treatment.

As regards the bearing on the prognosis of histologic structure, the stage of the disease, and the degree of anemia, it is noteworthy that the prognosis was worse in those cases in which the morphology of the tumor presented that of typical well developed Hodgkin's disease, in those cases which had been of several years' duration when the patients were referred for treatment, and in those cases in which the anemia was markedly developed. In relation to the effect of mixed toxins when used for a long time, it is of interest to compare the results in Cases 10 and 15 with those of Cases 2 and 6. The histologic pictures in Cases 10, 15 and 2 were those of typical Hodgkin's disease; that in Case 6 was atypical, showing more reticulum cells and presenting an appearance more like sarcoma. The morphology of Cases 2 and 6 as compared with Cases 10 and 15 indicates that Case 6 was more malignant in type than any of the other three cases and that Case 2 was as malignant as Cases 10 and 15. In Cases 10 and 15, the patients were given mixed toxins over a long period of time before being given over to Roentgen treatment. In Cases 2 and 6 the patients were submitted to mixed toxins only for a short period of time before being placed wholly under Roentgen treatment. The results in Cases 10 and 15 were bad while the results in Cases 2 and 6 were good. We feel that from our observations we are justified in holding that the patient's welfare is distinctly hazarded by the use of mixed toxin treatment for any extended length of time before placing him under Roentgen treatment, and we strongly advocate that the interests of the patient would be served best if the mixed toxin treatment were omitted altogether in these cases. In Case 18 the result has been better than in any of our previous cases. This may be explained to some extent by the patient's strong constitution and lack of anemia, and it may also be of interest to state that in this case there is some evidence that the initial lesions were of thymic origin. It is to be regretted that we were unable to secure necropsies in any of our cases. It was noticeable that the enlargement did not recur in glands treated by the Roentgen ray. When enlarged glands did develop they were in locations other than those which had been treated.

Fig. 3.—Case of lymphosarcoma, before and after treatment: Duration previous to our observation, five months. Mixed toxin treatment, November, 1913, to January, 1914. "No visible change. Measurements are the same." Jan. 3, 1914, one massive Roentgen treatment given. January 10, growth had diminished one half. January 15, excision en bloc. (Dr. W. A. Downs). January 26, tumor present in the left neck just below the angle of the mandible; 7 by 10 cm. January 27, Roentgen treatments resumed. Feb. 7, both sides of neck almost normal in contour. February 10-28, autogenous vaccine prepared from the excised tumor was used (Dr. R. Weil). March 4, 13, 16, 20, killed cultures of diphtheroid bacillus cultures obtained from the excised tumors were given (Dr. Torrey). March 16, 1914, superficial nodules yielded to the Roentgen treatment, but internal metastases in lungs, stomach and abdominal cavity continued to grow. Twelve massive Roentgen treatments, 3,604 X (Kienböck) units, were given. Jan. 14, 1915, patient died. Necropsy showed lymphosarcomatosis.

Death in all these cases was by slow exhaustion with extreme anemia. In none of the cases were there any deaths by asphyxia, dyspnea or other disagreeable symptoms due to the mechanical pressure of the enlarged glands such as commonly occurs in cases of Hodgkin's disease treated by the usual methods. This is a very material point in favor of the Roentgen treatment of these cases.

TREATMENT

The treatment of Hodgkin's disease is extremely unsatisfactory both in results obtained and methods employed. Perhaps this is to be expected in a disease, the cause of which is unknown, and which on microscopic examination of involved tissues in its early stages is extremely difficult to differentiate from lymphosarcoma, lymphoma, thymoma, and the other adenopathies of lymphoid origin. No specific or constitutional method of treatment has been established. The modern methods advised are essentially the same as those employed for malignant tumors (complete excision and diagnosis by microscopic section in the earliest stages while the lesion is restricted to a single locus, followed by prophylactic Roentgen treatment, together with the searching out and the elimination of all possible foci of infection).

We feel that particular emphasis should be laid on the necessity of extensive general Roentgen treatment in all of these cases immediately after the diagnosis is established. The surgical removal is only local in its action, and constitutes more or less of a shock and drain on the patient's vital resources.

The Roentgen rays should be given over all lymphatic structures of the body, including the mediastinal and abdominal lymph nodes, thus giving us a general action which in proper dosages we have invariably found to improve the patient's general physical condition instead of weakening him as the extensive surgical operations did in the fully developed stages of the disease.

The matter of the best Roentgen-ray dosage to give and its regulation on some physiologic basis is a very important question which we feel is far from being satisfactorily settled. Before the Coolidge tube was perfected we gave smaller doses. With the increased dosage which we are enabled to give with the Coolidge tube, we are able to get the symptoms under control more quickly than we did previously. However, we are not convinced that our therapeutic results in Hodgkin's disease are any more lasting than they were formerly with less powerful apparatus. Of late we have felt that we were getting better results by giving the massive doses at the beginning of our treatments and continuing them until the symptoms were controlled and then giving more moderate dosages to keep the development of the disease in abeyance. At pres-

ent we feel that we are justified in saying only that the optimum dosage has not been worked out and that the maximum dosage which we have been able to give with the Coolidge tube when long continued is not as beneficial as initial large doses until the symptoms are controlled, followed by smaller doses repeated at frequent intervals. This whole question needs further study, and the discovery of some physiologic method of checking the dosage to replace the present methods of the maximum dosages that the skin will tolerate.

In our experience the administration of inorganic arsenic in large doses as generally recommended in medical textbooks has been attended with poor results, and where efficient Roentgen-ray or radium treatment is available, arsenic in large doses should be avoided. We much prefer to overcome the anemia by the use of sodium cacodylate, iron, and constant and persistent elimination of all stasis and autointoxication from the intestinal canal as being more efficient and less harmful treatment.

As in all diseases for which no cure has been found, the literature is frequently embellished by premature reports of cures. On account of the common history of relapse in these diseases we agree that it is wise to demand that a patient shall be symptom free at least five years before the term "cure" is employed. In this connection, Johnson's dictum in regard to cancer cures is quite appropriate: "I never count a case of malignant tumor cured until the patient is dead of some other disease."

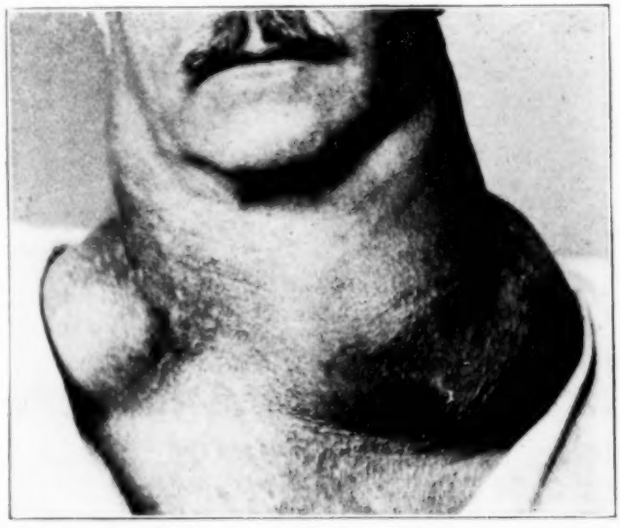


Fig. 4.—Case of lymphadenoma: Forty-one massive treatments with Roentgen deep therapy, 30 X (Kienböck) to each area, filtered through 4 mm. of aluminum. Total, 1,620 X (Kienböck). Areas treated: both sides of neck; both axillae; over abdominal lymph nodes; mediastina from all sides. Patient under treatment from June 24, 1915, to Nov. 1, 1915. The size of the tumors diminished very materially but never disappeared. Patient dead.

We have no cured cases to report at this time. Our experience has made us skeptical in regard to methods of treatment which have given results in only one observer's hands, even if his enthusiasm leads him to maintain his claims over long periods. In the so-called incurable diseases, and in the light of medical history, no method of treatment which has given results in a single observer's hands can be accepted as scientific or truthful until his results have been confirmed by other observers using the given method.

In regard to the few authenticated reports of cured cases out of the many thousands of patients who have died of this disease, it is only just to state that they were thoroughly treated in their incipiency by surgery and the Roentgen ray, and it is the experience of every one who observes large numbers of hopeless cases to witness an occasional sporadic instance of unusual recovery or spontaneous cure often when least expected. This is fortuitous, merely emphasizes the complexity of the forces we are dealing with when treating the human body, and stimulates us to search still further in such cases to find the reason for the recovery.

While the necessity of searching out hidden foci of infection in the tonsils and about the teeth, gums, etc., has been thoroughly emphasized, our experience is that efficient attention to ridding the intestinal tract of all stasis and autointoxication is practically neglected. We find it advisable to give nonirritating enemas twice a week or often enough to get scybala-free evacuations. The most harmless and efficient intestinal antiseptic we have found to be sulphur. Nonirritating enemas and sulphur should be persisted in until the ingestion of sulphur is not associated with any odor of hydrogen sulphid in the patient's stools.

It was noticeable that better results were obtained when treatment was instituted in the early stages of the disease when lesions were confined to one side of the neck. It is quite probable that if patients in whom the lesion was confined to the tonsil or to a few glands of the neck presented themselves for treatment, they might be cured by complete tonsillectomy and excision followed by postoperative Roentgen treatment; certainly these methods should be given a thorough trial in cases in the incipient stages of the disease.

CONCLUSIONS

1. Microscopic examination of the tissues in all cases of enlarged nodes, especially in the neck, is to be recommended.

2. Attention should be called to the fact that cases of persistent idiopathic pruritus may be due to Hodgkin's disease.

3. The treatment of Hodgkin's disease is unsatisfactory. No efficient treatment is known. The treatment recommended is that in vogue for malignant tumors and occult infections. The results to be expected are temporary ameliorations.

4. Recoveries are rare. Of the thousands of patients treated there are only two authentic cases in which the patients are reported symptom free after five years.

5. The Roentgen ray and radium are the only new agents found beneficial in this disease, and should be used in treating it, at least after operation.

6. A Roentgen examination of the chest is indicated in all cases before an extensive surgical removal is considered. This will save many patients from a needless operation.

53 West Fiftieth Street—235 West Seventy-First Street.

Health Dividends.—I will frankly admit that I could not realize what a great change could be brought about by systematic work and with very little expense. The money spent in antimalarial work here has paid the quickest and most enormous dividends I have ever seen from any investment, and after having had our experience I would, if necessary, do the work over again if I knew it would cost ten times the amount. . . . Our experience has taught us that the eradication of mosquitoes is not only the proper thing to do from a strictly health standpoint, but it is an exceedingly profitable thing to do.—Manager of a Southern cotton mill, quoted by J. W. Trask, *Public Health Reports*, Dec. 22, 1916.

FREE TRANSPLANTATION OF THE OMENTUM

SUBCUTANEOUSLY AND WITHIN THE ABDOMEN

CARL B. DAVIS, M.D.

CHICAGO

The use of the unsevered omentum and free omental grafts is a well known surgical procedure. The literature concerning the fate of the free transplants is meager.

Fig. 1.—The spleen severed; a free transplant of the omentum inserted; the cut edges of the spleen approximated with catgut.

The purpose of these experiments was to determine the ultimate fate and value of omentum cut loose from its normal blood supply. Freeman suggests that an advantage of the free transplant over the undetached tip of the omentum is that we avoid entangling bands and injurious traction on the colon and stomach, and that if the entire omentum is attached to a given spot, a secondary emergency may develop in which it would be needed again.

TECHNIC

In this work the omentum was transplanted in large and small amounts to the stomach, large and small bowel, liver, spleen, kidney, bladder, and various areas denuded of peritoneum. It was also transplanted free beneath the skin to determine its ultimate fate when used for plastic purposes. It was used to check superficial and deep hemorrhages in the liver, spleen and kidney.

The grafts almost invariably did well wherever they were carried, becoming firmly adherent and remaining viable. One great objection to the use of the free omentum is the enormous production of adhesions wherever the free cut edge is exposed. This may be avoided in large part by accurately turning under all raw edges. The raw stump of the proximal portion of severed omentum must also be rolled back under normal omental tissue to avoid adhesion. A number of our animals died of pneumonia. As there was distemper in the laboratory at the time, it was taken for granted that this was the source of the complication, and no microscopic study of the lung was made. Later it was suggested that omental thrombosis might have been the cause of these deaths.

Strangulation of the bowel occurred in a case in which the graft was attached by widely separated sutures. A loop of small bowel passed under the graft became adherent, and the animal was lost.

RESULTS

The transplants to the various viscera and abdominal wall, when properly applied, gave excellent results. In a number of cases of adhesions of the small bowel in postoperative hernial sacs, we were able to cover a section of denuded ileum with transplanted omentum with excellent results, so far.

Fig. 3.—A through-and-through perforation of the liver; defect filled with omental graft; animal killed after six weeks.

Loewy was the first to use free omental transplants to check severe hemorrhage from the liver. In repeating Loewy's work, we abraded the surface of the liver, and in addition cut the body of the liver and spleen entirely through, or with forceps produced extensive through and through lacerations of the liver and spleen.

The cut edges were approximated with catgut sutures after an intervening omental graft had been applied. The lacerations were filled with omental plugs. The almost immediate hemostasis was quite striking and beyond that which might be expected by mechanical means.

Hilse has shown that tissue extracts of omentum, fascia and muscle possess the ability to shorten greatly the coagulation time of blood by activating the prothrombin.

The liver and spleen with their free grafts were removed at varying intervals from weeks to months, and showed complete viability of the tissues.

Omentum transplanted freely beneath the skin in masses an inch in diameter maintained the greater portion of their bulk.

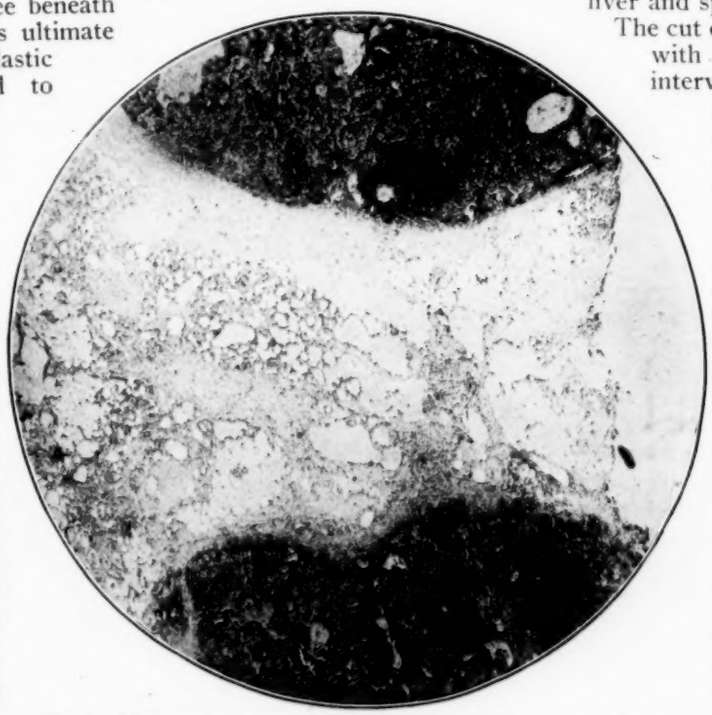


Fig. 2.—Microscopic study of omentum removed from the spleen as shown in Figure 1, × 16.

Microscopic examination of the grafts shows an astonishing viability. It seemed to be of little consequence whether the graft was half an inch or 3 inches in diameter.

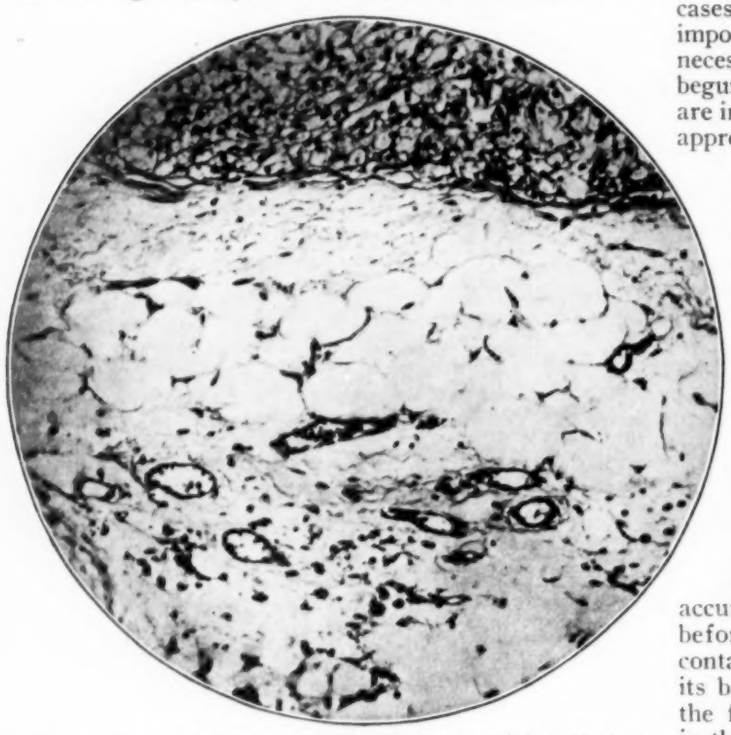


Fig. 4.—Microscopic study of omental graft removed from liver, as shown in Figure 3, × 160; section removed after two months.

122 South Michigan Avenue.

A METHOD OF CONTROLLING HEMORRHAGE IN CHOLECYSTECTOMY

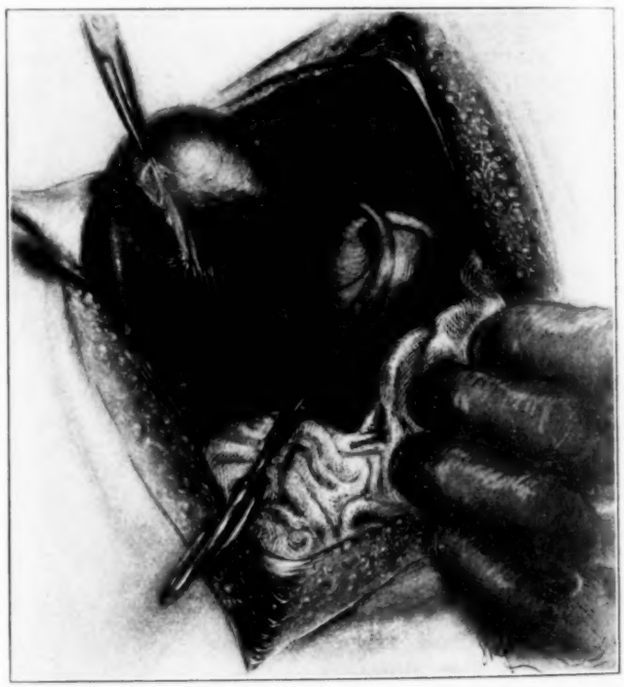
D. B. PHEMISTER, M.D.
CHICAGO

The difficulties experienced in the operation of cholecystectomy, with their consequent increase in the operative risk, are responsible to a considerable extent for the wide variance in opinion as to the advisability of its performance in place of chylecystotomy. The general adaptation of the Bevan curved or oblique incisions beginning above near the xiphoid, permitting of outward rotation of the liver with consequent exposure of the region of the ducts, has greatly improved the operative results. The removal of the gallbladder by starting at the cystic duct has become the routine procedure wherever possible in a great many clinics. Its chief advantage lies in the better hemostasis during the separation of the gallbladder from the liver, since the most troublesome bleeder, the cystic artery, is clamped, cut and ligated along with the cystic duct as the first step in the removal. The oozing which occurs from the surface of the liver as the gallbladder is cut away is usually readily controlled by the suture with which the gallbladder sulcus is closed. Separate ligation of bleeding points or a gauze pack left in place may be necessary in some cases.

This is doubtless the best plan of procedure when it can be carried out. Yet a great many surgeons find it difficult or still prefer to begin the removal of the gallbladder at the fundus. Even in the hands of its most skilled advocates it has to be abandoned in certain cases in which adhesions and liver fixation make it impossible to obtain sufficient exposure. When by necessity or choice the removal of the gallbladder is begun at the fundus, the branches of the cystic artery are injured repeatedly as the main trunk of the vessel is approached. This frequently results in an annoying hemorrhage, which can be avoided in the following way:

After separation of adhesions about the gallbladder and its pedicle, if any are present, the cystic duct and artery region are definitely located by inspection, if possible, and, if not, by careful palpation and a curved forceps applied at the point at which it is desired to amputate and ligate. This will prevent any hemorrhage from the cystic artery, and the gallbladder can be removed from the fundus to the neck with only such minor disturbance from bleeding as occurs from the liver surface. After separation of the gallbladder, if the clamp is not on the pedicle at the point at which it is desired to amputate, it may be unlocked and readjusted. This will usually be found unnecessary, as by inspection or accurate palpation the forceps can be properly placed before the separation is begun. The peritoneal fold containing the duct and artery may be perforated at its base and separated from the liver by the point of the forceps, after which the entire pedicle is grasped in the forceps. This facilitates ligation after the gallbladder has been cut away.

An objection brought against this procedure was that in all cases in which a curved forceps could be placed on the pedicle, it ought to be possible to begin the removal of the gallbladder at this point. This objection does not hold, as the forceps can be applied after separating the adhesions in the most buried cases.



Forceps in position on artery and duct at beginning of cholecystectomy.

122 South Michigan Avenue.

New Instruments and Suggestions

A NEW CEREBELLAR HEAD REST

NORMAN SHARPE, M.D., NEW YORK
Neurologic Surgeon, New York
Post-Graduate Hospital

The head rest here illustrated possesses these advantages:

1. It will fit any operating table.

2. When adjusted, it is a part of the table and is not dislodged from position if the table is moved.

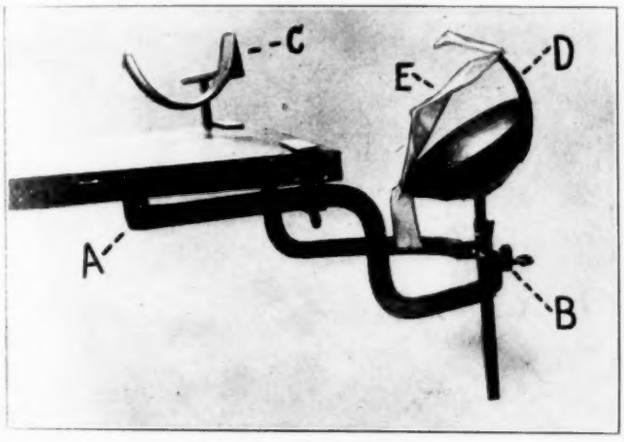
3. It is simple, having only three points of adjustments.

4. The head is held firmly in place, thus permitting strong retraction of the muscle flap, obviating the necessity of extra incision. I now no longer find it necessary to make the vertical incision of the cross bow, thus lessening loss of blood and amount of scar.

5. The head is held in strong flexion, permitting easy access to the depths of the wound about the base of the occiput.

6. The head cap can be raised or lowered at will, allowing for change of position if desired and making an easier approximation of the wound edges in closing.

7. It is light, weighing less than 10 pounds, and is easily transported, forming, when taken apart, a package 24 inches long and 8 inches in diameter.



New cerebellar head rest.

The head rest is fastened to the table by the clamp, *A*. It is adjusted to the width of the table by the cross bar at *B*. This allows a play of 5 inches, making it fit any operating table. The shoulder supports, *C*, move in two directions, lengthwise on the side arm of the apparatus, and transversely, to fit differences in the width of the chest. The head cap is moved upward or downward, passing through a socket 3 inches long to give stability. All sockets and bars are made square to prevent slipping or turning.

When the head is placed in the padded cap, the slotted curved metal ribbon, *D*, is moved up over the head to the crown, and from the slot in the end of the ribbon a wet piece of muslin bandage (*E*) is carried along the head on each side to slots in the forehead of the cap and firmly tied. The slotted ribbon, *D*, is secured in place by a thumb screw at *F*. This draws the muslin strips which pass under the parietal eminences and above the ears still tighter, and holds the head firmly in the cap. In operations on children a smaller cap is used, which rests by hooks on the rim of the larger cap.

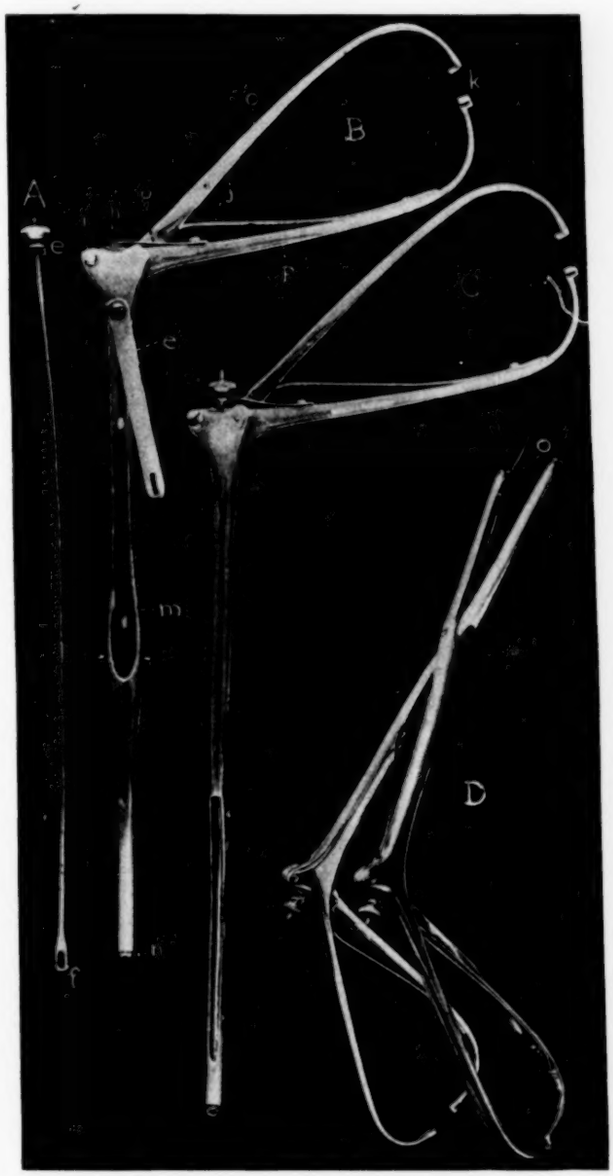
I have used this head rest in my last seven operations on the cerebellum, and find it far superior to the others I have used.

No Room for the Impracticable.—Those things which are not practicable are not desirable.—Edmund Burke.

A NEW INSTRUMENT FOR DEEP SEWING

CLIFFORD B. WALKER, M.D., BOSTON
Associate in Surgery, Peter Bent Brigham Hospital

Previous efforts on this problem have resulted in the use of two general principles, first the aneurysm needle type, which is either threaded before or after inserting, or, second, the barbed needle type, in which the needle is dragged through by its barb tip, engaging a spring ratchet in the opposite member. These devices have the disadvantage of sewing in only one direction, of placing one stitch at a time, of tearing large holes, and of usually requiring both hands or assistance in a space already limited in extent.



Deep sewing instrument: *A*, tension wire passing through each tubular member (of *B* and *C*). The length of this wire can be regulated by the ratchet tension burr (*e*). The distal end (*f*) is stirrup shaped, and acts as one side of the needle clamp. *B*, one member with tension wire removed, showing the tension burr spring (*g*), which holds the tension burr against the ratchet (*h*); the ordinary needle holder catch and release (*k*) working against the spring (*j*) and through the fulcrum (*i*) to pull strongly on tension wire (*A*); open joint (*m*); copper tipped end (*n*), which forms the other side of the needle clamp. *C*, the other member with tension wire in place just as it was removed from the open joint (*m*) of *B*. *D*, instrument assembled with double ended needle (*o*) threaded through its central eye and clamped in one member. Both members receive and hold the needle in the same manner, so that continuous sewing back and forth may be accomplished if desired.

The instrument devised to obviate these difficulties consists essentially of two specially designed needle holders hinged together scissors fashion but by means of an "open joint" as shown at *D*. The parts were also photographed to a somewhat larger scale (as in *A*, *B* and *C*) to show more detail.

Needles varying in length from 0.75 to 3 cm. or even greater lengths can be used. They are tapered and sharpened at both ends, and are curved to an arc of radius equal to the distance from the needle clamp to the open joint. Ordinary sizes of suturing silk, catgut or chromicized catgut may be used; for the most part we have used No. 2 chromic. The needles, while varying in length, are all made heavy and strong about the centrally situated eyelet so that there is never any danger of breaking, thereby losing a portion in the tissue, as has occurred with ordinary curved needles. Further, it is never necessary to let go of the needle and pick it up again, since it is always clamped in one side or the other of the instrument.

This instrument is useful, and a great comfort in controlling hemorrhage both at the operation and afterward, when it is even more difficult to work in the patient's mouth with curved needles because of the pain. In either case two general methods are used and never fail. First, if, as is usually the case, long hemostats can be used to clamp the bleeding points, seldom more than one or two in number, then the needle is quickly passed through the fold of tissue on both sides or even one side of the hemostat, and tied as the hemostat is loosened. Second, if, as rarely happens, there is no bleeding from definite points but rather a general ooze from the tonsillar fossa, the condition is readily handled by packing the fossa with a roll of oiled gauze, when it is extremely easy to pass one or two catgut sutures through the pillars, drawing them together over the gauze. The instrument here shown has been in use over a year without failure or repair. It is well made by Codman & Shurtleff of Boston.

A NEW ANESTHETIC SHIELD

ISABELLA C. HERB, M.D., CHICAGO

The chief advantage of this anesthetic shield (Fig. 1) is that it is not attached to the table, and consequently it can be arranged for various operative positions. It consists of a plate of steel 20 inches long, 8 inches wide and one-eighth inch thick with an upright rod 7½ inches high at each end.

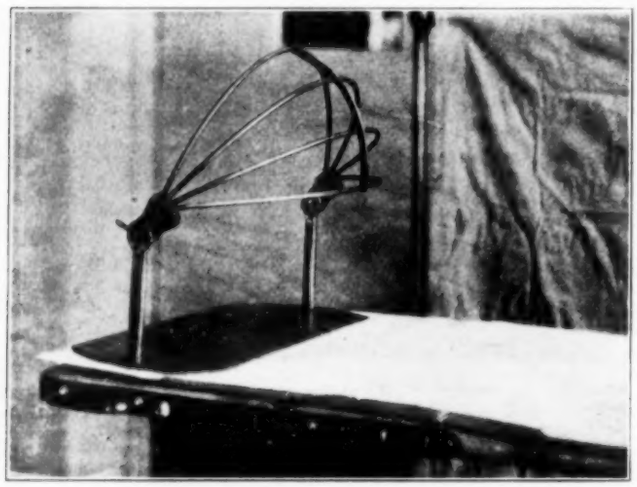


Fig. 1.—New anesthetic shield.

The shield portion is composed of four bars, separated 3 inches at the highest point, which gradually converge and are inserted in the upright rods by a screw device which enables the adjustment of the shield at various levels to suit the thickness of the patient's chest. The plate is placed under the pillow or between the pillow and the pad covering the table.

Figure 2 shows the shield in position for the majority of operations.

Figure 3 shows the shield placed diagonally across the corner of the table for breast and shoulder operations.

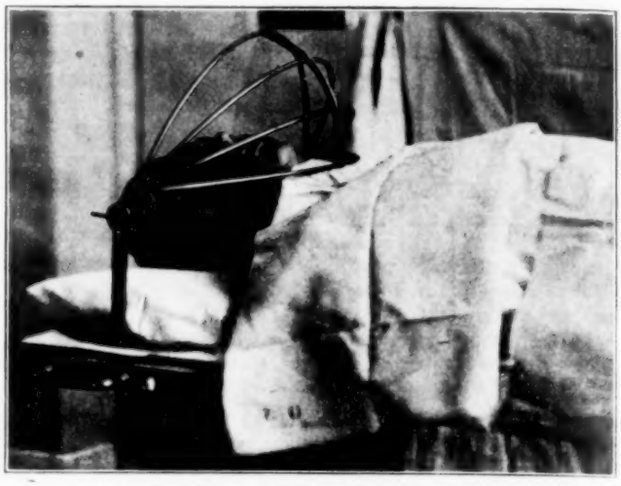


Fig. 2.—Shield in position for majority of operations.

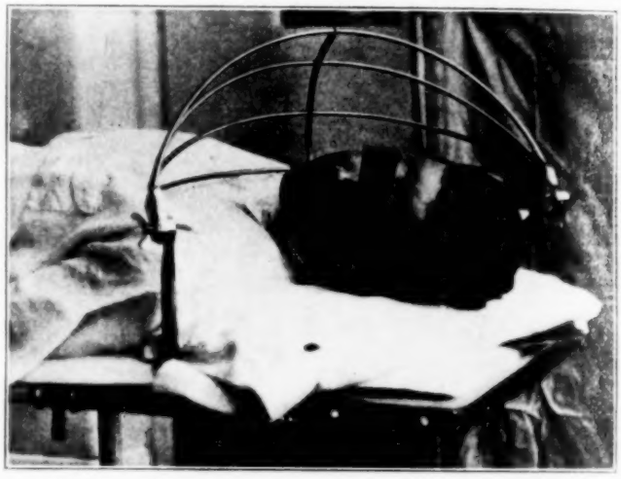


Fig. 3.—Shield placed diagonally across corner of table.

I am indebted to Dr. Gatewood for suggestions for the screw device.

V. Mueller & Co., Chicago, are the makers.

Trade Accidents in 1916.—According to Commissioner James M. Lynch of the New York State Industrial Commission, 1916 showed approximately 60,000 industrial accidents in the state, with approximately 1,500 deaths, 120 permanent total disabilities, 6,180 permanent partial disabilities and 52,200 temporary disabilities with a loss of time of more than two weeks. The amount of compensation provided for by the law for these 60,000 cases would be $11,500,000, $5,000,000 of which would be for deaths, $4,500,000 for permanent injuries and over $2,000,000 for temporary injuries. These sums, it is said, do not represent the total economic loss from accidents during the year. The cost of medical benefits, of administering the compensation law, administering insurance and the wage and medical losses of injured employees not covered by the compensation law should be added. It is believed that the total loss would equal $30,000,000. A review of the results accomplished in nine industrial plants in as many different industries shows that a reduction of 10 per cent. in loss from accidents is possible. Of the nine firms, five in two years reduced their accidents 40 per cent., two 50 per cent., and one other firm with a longer experience had reduced the accident rate 75 per cent. in four years.

INACCURACIES IN THE SIZE OF HEMACYTOMETER CHAMBERS AND PIPETS

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Professor of Bacteriology and Pathology, George Washington University Medical School

The accidental discovery of a hundred per cent. error in the depth of a recently purchased chamber of the Helber type led to an examination of the accuracy of others and to inquiry at the Bureau of Standards as to the accuracy of hemacytometers in general.

The gross error referred to was discovered by an enthusiastic student who used the Helber chamber in making a count of red blood corpuscles. In calculating the number of corpuscles from the data obtained he found twice the number of corpuscles that one of his companions found in the same blood. He repeated the work with a similar result. The conclusion was obvious that the Helber chamber was about 40 microns deep instead of the labeled 20. Probably other counting chambers are on the market or in use as carelessly labeled as is this one.

Before it was learned that the Bureau of Standards was prepared to test hemacytometers, measuring the depth of chambers was attempted by allowing blood or India ink to dry on the ruled disk and on the surrounding plateau and calculating their difference in focus when viewed with a 1/12 objective, a microscope with the fine adjustment graduated to indicate depressions or elevations of a micron being used. The results of this crude method are given in Table 1. Measuring the thickness of the ruled disk and slide on which it is mounted, and then the thickness of the plateau and the slide, and taking their difference with an ordinary micrometer caliper was found to be an equally crude method, owing to the fact that the glass slide on which the ruled disk and plateau are mounted does not have its upper and lower surfaces parallel, and probably these surfaces are not perfect planes.

The method employed by the Bureau of Standards in measuring the depth of chambers is to apply a heavy glass disk of known thickness to the counting chamber and to take the combined thickness of that, the plateau surrounding the ruled disk, and the glass slide on which the plateau and ruled disk are mounted, by means of a micrometer measuring machine, and to use the mean of four readings. The mean of four similar measurements for the thickness of the ruled disk and the mounting slide is then ascertained. The difference between these two means, less that of the glass disk of known thickness, gives the depth of the chamber. This method of measuring them is accurate to less than 1 micron. It is the opinion of Mr. D. R. Miller, of the Bureau of Standards, that makers of hemacytometers can with care make chambers accurate to within 2 microns of the labeled depth. This corresponds to an error of 2 per cent. on the ordinary blood counting chamber, of 1 per cent. on a Fuchs-Rosenthal chamber, and of 10 per cent. on a Helber chamber. From Table 1 it will be seen that only one of the five counting chambers measured for me, representing three standard German makes, comes up to these requirements. An error of 10 per cent. in the case of the Helber chamber could not be considered important if it is used in counting the number of organisms in bacterins. If used for cytologic work, it ought to be more accurate. One and 2 per cent. errors in ordinary blood counting are negligible.

TABLE 1.—LABELED AND ACTUAL DEPTHS OF COUNTING CHAMBERS *

	Helber Counting Chamber Maker M.	Fuchs-Rosenthal Counting Chamber, Maker M.	Thoma Counting Chamber Maker N.	Thoma Counting Chamber Maker O.	Thoma Counting Chamber Maker M.
Labeled depth of chamber.....	20	200	100	100	100
Depth of chamber as measured by the Bureau of Standards.....	46	203.4	100.2	104.2	104.4
Estimation of depth by noting change in focus of particles dried on the ruled disk and on the plateau	42	186	101	99	97

* The figures are thousands of a millimeter, or microns.

Another possible source of error in the counting chamber is that the square millimeters on it and the 1/400 square millimeters on it are not what they are labeled. I have measured some of them by means of a stage micrometer and micrometer eyepiece, and they were found to be as near their alleged size as that method is capable of measuring. It is practically possible to rule the square millimeters to within 1 micron of accuracy, yielding thus an error of 0.1 per cent. Slight variations in the small squares may be tolerated, provided that, in making counts, diagonal blocks are used, for example, by using the twenty-five small squares in the upper left hand corner, then the block immediately and diagonally to the right and below, then the next similarly placed block of twenty-five small squares finally ending up with the block of twenty-five squares in the lower right hand corner. Any slight variations in the spacing of the lines that make up the small squares is thus compensated for, as squares formed by all the lines are involved.

TABLE 2.—CAPACITY OF DILUTING AND MIXING PIPETS EXPRESSED IN CUBIC CENTIMETERS, AND SHOWING LABELED AND ACTUAL CAPACITY RATIOS AS TESTED BY U. S. BUREAU OF STANDARDS

Manufacturer	Capacity of Interval, C.c.				Nominal Capacity Ratio		
					1:2*	1:10†	1:100‡
	0 to 0.5	0 to 1.0	0 to 11	0 to 101	Actual Capacity Ratio		
A	0.0176	0.0348	0.2876	.....	1:1.98	1: 5.8	
A	0.0151	0.0313	0.2643	.....	1:2.07	1: 7.4	
A	0.0041	0.0090	.....	0.6664	1:2.20	.....	1: 73
A	0.0025	0.0052	.....	0.5428	1:2.08	.....	1:103
B	0.0145	0.0279	0.3019	.....	1:1.92	1: 9.8	
B	0.0224	0.0436	0.2699		1:1.95	1: 5.2	
B	0.0021	0.0044	.....	0.4585	1:2.10	.....	1:103
C	0.0125	0.0255	0.2939	.....	1:2.04	1:10.5	
C	0.0020	0.0042	.....	0.4519	1:2.10	.....	1:106
D	0.0124	0.0248	0.2738	.....	1:2.00	1:10.0	
D	0.0106	0.0216	0.2518	.....	1:2.04	1:10.6	
D	0.0096	0.0196	0.2222	.....	1:2.04	1:10.3	
D	0.0036	0.0071	.....	0.8003	1:1.97	.....	1:112
D	0.0042	0.0084	.....	0.8917	1:2.00	.....	1:105
D	0.0040	0.0082	.....	0.8353	1:2.05	.....	1:101

* Actual capacity ratio calculated from intervals 0.5 and 1.0.
† From 0 to 1, and 1 to 11 [i. e., (0 to 11) minus (0 to 1)].
‡ From 0 to 1, and 1 to 101 [i. e., (0 to 101) minus (0 to 1)].

Attention has been previously called to variations in the calibration of the mixing and diluting pipets.[1] I have never had the accuracy of the pipets under my observations tested. The figures in Table 2, supplied by Mr. H. W. Bearce of the Bureau of Standards, are very significant in this connection. The errors range from 50 per cent. down to none. Only six out of the fifteen pipets listed have an error of less than 5 per cent., and two of less than 2 per cent.; one pipet for making counts of white corpuscles is perfect. The most perfect pipet for making red counts is 1 per cent. wrong. Probably the general run of pipets in use is not more accurate. Mr. Bearce is of the opinion that it is practicably possible to calibrate pipets to have an error not greater than 2 per cent.

An error of tolerance of 2 per cent. in the pipets and of 2 per cent. in the counting chambers, with a practically negligible error of 0.1 per cent. in the size of the square millimeter of the ruled disk gives an instrument with an error of 4 per cent. As shown by Emerson,[2] 4 per cent. represents a reasonable error in blood counting. An instrument designed to give counts within 4 per cent. is almost as near perfection as is the user of the instrument, and ought to be satisfactory, at least for clinical purposes. For the highest degree of accuracy as might be demanded in some scientific investiga-

1. Wood, F. C.: Chemical and Microscopical Diagnosis, Ed. 2, 1909, p. 48.
2. Emerson, C. P.: Clinical Diagnosis, Ed. 4, 1913, p. 469.

tions, cell counts could be calculated on the basis of the actual size of the instrument. Manufacturers, however, if possible ought at the same time to keep the error within 1 per cent. in the case of the counting chamber and the pipets, as Emerson has shown that experts in blood counting are able to keep their errors within 2 per cent.

The suggestion is offered that the counting chamber of hemacytometers should be made of one solid piece of glass instead of the usual three cemented pieces. Wood[1] has called attention to variations in the depth of chambers due to changes in temperature affecting the cement. In addition to the name of the maker and other information placed on them, the chambers should be given a serial number, as is frequently done with the pipets. Each chamber could then be furnished with a certificate of accuracy. It is possible to number the chambers as made in the usual manner with the ruled disk and the plateau cemented to a heavy plate. This is actually done with those chambers measured by the Bureau of Standards, but there is always the possibility of the cemented pieces of glass coming off, and there would be nothing to interfere with irresponsible parties cementing them on again or even cementing them on other numbered glass plates.

SUMMARY

Several hemacytometers measured by the Bureau of Standards show gross inaccuracies as to the depth of counting chamber and calibration of pipets.

An error of tolerance not exceeding 2 per cent. in the case of the depth of the counting chamber, and in the calibration of the pipets should be adhered to by the manufacturers. If possible this error should be kept to within 1 per cent. in each case. An error of tolerance not exceeding 0.1 per cent. should be allowed for the size of the square millimeters of the chambers.

It would be desirable to have the counting chambers made of a solid piece of glass.

Each hemacytometer should be furnished with a certificate as to its accuracy or as to its errors.

The Bureau of Standards, Washington, D. C., is prepared to test the accuracy of hemacytometers for a nominal fee.

AN IMPROVIZED SHAKING MACHINE

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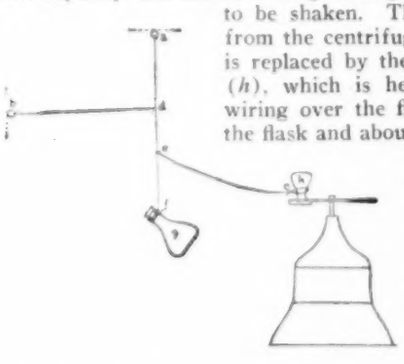
Pathologist, Washington Asylum Hospital

The essential parts of this contrivance are an electric centrifuge, some heavy twine and two flasks, one of about 50 c.c. capacity and the other large enough to carry the material to be shaken. The shells are removed from the centrifuge arms, one of which is replaced by the inverted 50 c.c. flask (*h*), which is held firmly in place by wiring over the flange at the mouth of the flask and about a thin piece of wood, cut to a suitable size and placed on the under side of the centrifuge arm. The shaking flask, *g*, is suspended by twine from a ring at *a*, the knot about the neck of the flask at *f* being a slip-knot to allow changing the flask without disturbing the whole apparatus. A cord is tied firmly to the cord *af* at *e*, and fastened loosely about the neck of the flask *h* at *c* so that the flask can revolve in the grasp of the knot. This cord, *ec*, is of such length as to reach from the point *e* to the shaft of the centrifuge. The centrifuge is then run at moderate speed. A third cord, *bd*, may be tied at the points indicated in the diagram to control the extent of the motion of the shaking flask, *g*. If a spiral spring is inserted between the points *a* and *f*, an additional vertical motion is obtained.

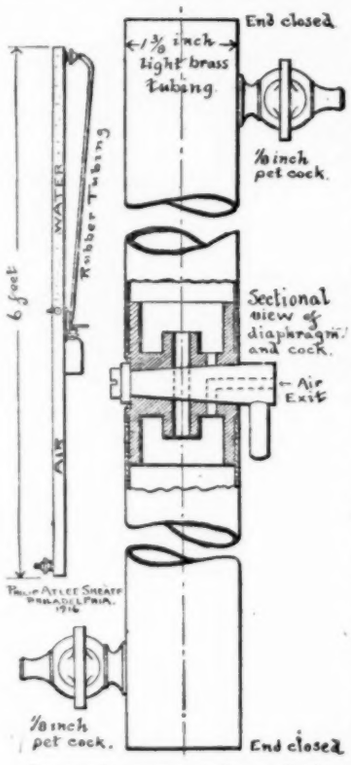


1424 K Street N.W.

IMPROVED ASPIRATING APPARATUS

PHILIP ATLEE SHEAFF, M.D., PHILADELPHIA

In THE JOURNAL, Sept. 16, 1916, I described an aspirating apparatus for office and hospital use in obtaining gastric contents, and, Dec. 2, 1916, Dr. Harvey G. Beck of Baltimore described an apparatus designed for the use of partial vacuum in diagnosis and treatment.



Improved apparatus for aspirating gastric contents.

Both of these devices supply a needed want, but are restricted in their usefulness by the fact that Beck's requires a faucet and running water, and mine is a permanent fixture in proximity to the wash-stand.

I have so modified my apparatus that it is portable, self-contained, always ready for use, and lends itself to various uses in diagnosis and treatment in which a partial vacuum is desirable, and in principle might be spoken of as a "hydrostatic hour-glass." It is brass throughout and consists of a piece of 1⅜ inch light brass tubing closed at each end, near which is a ⅛ inch pet-cock. A diaphragm containing a cock divides the cylinder into two compartments of equal capacity. The upper half is filled with water, the lower half with air. In operation the tube is placed in the vertical position, a rubber tube connects the upper pet-cock with the aspirating bottle (which for convenience is held to the tube by a clip) as shown in the sketch, a cupping glass, or other container for blood or fluid, the pet-cock is opened, and the diaphragm cock turned with its handle down.

This allows the water in the upper chamber to pass into the lower chamber, thus displacing its contained air, as shown in the sketch, and with a tube of the length shown, generating a negative pressure of 65 mm. of mercury in the aspirating bottle. After the operation is over, any remaining water in the upper chamber is allowed to flow into the lower chamber and all cocks are closed, when the apparatus is instantly ready for use again by turning it upside down and repeating the manipulation after connecting the tubing of the aspirating bottle to the upper pet-cock.

No water is lost, the device is simple, and while somewhat long, can be carried easily; it does not take up much space when not in use, as it can stand in a corner; is easily maintained in the upright position by throwing a bandage around it and the back of a chair; has no valves to get out of order; requires no wash-stand and running water, and the three cocks which it contains need no more attention than an ordinary gas fixture.

4006 Baring Street.

Judgment in Health Expenditures.—To spend the resources of the department on other peoples' pet projects, on things which, even though desirable, are not in given circumstances essential, is to tithe mint, anise and cummin and neglect the weightier matters of the law. These weightier matters are the activities which experience has shown to be fruitful of real results. They follow paths clearly marked, toward a definite goal—the health of the state.—Alice Hamilton, *Survey*, Jan. 20, 1917.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(*Continued from page 635*)

TREATMENT OF ACUTE NEPHRITIS

The treatment of acute nephritis requires immediate bed rest in a warm, but properly ventilated, room.

During all acute diseases the urine should be frequently examined, and especially in diseases and conditions known frequently to result in nephritis, such as scarlet fever, erysipelas, serious burns, and poisoning, in order that the first indication of kidney inflammation may be noted. In these diseases all irritant foods should be prohibited, and all drugs which may cause irritation should be withheld, such as phenol compounds, synthetic drugs, irritant diuretics, aromatics, coffee, tea and alcohol. Observation of these cautions may prevent many kidney complications.

Cold applications should be used with great care; warm sponging is often as efficient as cold sponging in feverish processes. Whatever measures are taken in the treatment of the patient, chilling of the body should be avoided, although he should have fresh, cool air to breathe.

Baths should be taken in warm or hot water, as anything which promotes normal perspiration tends to relieve congestion of the kidneys; anything which tends to inhibit the secretions of the skin or to cause the skin to become cold and dry increases the congestion of the kidneys.

Meat proteins should be especially avoided as soon as traces of albumin are found in the urine, and the diet should become more and more rigid, according to the extent of the inflammation. The proper diet in acute nephritis is milk, or foods of the same character. If milk is not well tolerated, thin gruels, as oatmeal or malted milk, cereal milk, etc., may be substituted. Barley water is a good beverage and has some nutritive properties. Salt should be almost entirely removed from the diet. Nephritis patients usually suffer greatly from thirst. The amount of water advisable varies with the condition. Theoretically we should allow a considerable quantity, to wash out, if possible, the plugged-up tubules of the kidneys. Practically, however, if edema is extensive, much water should be avoided, although, if the circulation is efficient, pure water in a salt-free diet perhaps does not tend greatly to increase the edema. A refreshing drink may be prepared from a teaspoonful of cream of tartar in a pint of boiling water to which is added the juice of a small lemon, and a little sugar if desired. This beverage, when cold, is very agreeable.

If the patient's stomach is disturbed, a short starvation period is advisable. It is not expedient to continue this treatment long, however, as it tends to acidemia, which would add its quota to the toxins already more or less present. Liberal quantities of hot water may be given to relieve the vomiting, and if this is not sufficient, several 1 gm. doses of bismuth subcarbonate and sodium bicarbonate should be given every three hours until the nausea and vomiting cease.

The indications to meet are:

1. To promote elimination during the time the kidneys are insufficient.
2. To keep the waste metabolism and the metabolism of protein foods at the lowest limit possible.
3. To allay the inflammation, if possible, and to hasten the stage of resolution.
4. To prevent uremia if possible.

1. To meet the first indication the body should be kept very warm, and hot sponge baths should be given. Profuse sweatings are not indicated, except such as may be caused by hot drinks and warm applications to the region of the kidneys.

Unless contraindicated by some previous condition, an active cathartic should be given — a few grains of calomel, a saline purgative, or castor oil — to remove from the intestinal canal all substances which tend to the production of toxins which may be absorbed into the blood and increase the toxemia. If the patient is a child, rhubarb or cascara sagrada may be used. Daily movements of the bowels are necessary, but more than two or three loose movements a day are not indicated, and if the heart is weak, this amount of catharsis is often contraindicated. Enemas for purgation may be substituted for cathartics.

Diuretics should not be given, with the exception of pure water, or possibly a water containing some simple alkali, such as potassium or sodium citrate, or acid fruits which burn to alkali, such as oranges and lemons. The juice of these fruits is acceptable and beneficial to the patient.

2. To meet the second indication, the patient should be kept physically and mentally at rest. The more restless the patient, or the more muscle movements he makes, the more products of muscle metabolism reach the blood and must be excreted. Minimum quantities of all foods, particularly those containing protein, should be consumed, so that the kidneys may have the least possible amount of waste products to care for.

If the patient vomits, for a short time all foods should be withheld. The stomach may be washed out with hot water, or the patient may be given small doses of bismuth subcarbonate and sodium bicarbonate. However, starvation should not be too long continued, as it tends toward the production of acidosis and symptoms similar to uremia; therefore, bland, starchy foods should be given as soon as possible. If the stomach cannot retain them, alkalies, such as sodium bicarbonate or sodium citrate, in weak solutions, should be introduced into the colon.

If during the period of active nephritis the patient is restless and cannot sleep, it may be advisable to give a dose or two of chloral or of bromid, but synthetic drugs, or coal-tar products, or anything that forms hematoporphyrin during its elimination through the kidneys, such as sulphonal, trional, and drugs of that type, should be avoided.

3. The third indication is met by warm applications to the lumbar region, moist warmth in this region being of special benefit to acutely congested kidneys. Hot alcohol and water fomentations bound close to the back by a bandage around the abdomen, kept warm by a hot water bag, and changed as soon as cool, afford a simple method of applying such heat. The old-fashioned flaxseed poultice is also beneficial. Later the moist heat may be changed to the dry heat of an electric pad, which also brings about local hyperemia and in a reflex way gives relief to the kidneys. When the patient is kept warm, fomentations like those mentioned above cause perspiration, although not the profuse perspiration of the Turkish bath, caused by steaming, or by the introduction of dry hot air under the bedclothes. Such profuse sweatings are rarely necessary, and it is a question whether the good they have apparently accomplished was not due to relief of the kidney congestion. Profuse sweating can do little more than

eliminate from the blood large amounts of water, and the toxins retained in the blood in nephritis and in uremic conditions consequently become more concentrated. On the other hand, profuse perspiration sometimes causes the blood to absorb water from edematous tissues, which will counteract the concentration of the poison in the blood caused by the perspiration. If prostrating perspiration is caused by these applications, it is best to stop them and rely on the more modified heat of an electric pad.

This treatment, if successful, finally brings about an increase in the amount of urine passed, then the amount of blood in the urine is diminished, less albumin appears, although the urine may be loaded with casts, the edema and dropsy disappear, and the patient becomes convalescent, although edema may persist for weeks and albumin may not disappear from the urine for weeks or months. However, in kidneys that were normal before the attack of acute nephritis, the albumin and casts generally disappear in five or six weeks.

During this convalescent period the diet is gradually increased, although meat proteins and nuclein foods are still forbidden. In other words, if the edema has disappeared the patient is allowed bread, rice, more liberal amounts of cereals, and potatoes, but less milk. The amount of salt allowed him is gradually increased.

During this long period of abstinence from meat it is advisable to give small doses of iron, such as 5 drops of tincture of ferric chlorid, three times a day, in orangeade or lemonade; and after the albumin has disappeared from the urine, or after two months, although the albumin may not have disappeared, small amounts of meat once a day may be allowed, as a very long period of meatless diet is often not advisable in these cases. Eggs, simple vegetables and fruit should be added to the diet even before the albumin has disappeared; and when meat is allowed (meat includes fish, chicken and fowl) all beef extracts, beef broths and beef stock soups should be prohibited.

During this convalescent stage the patient may begin to sit up, walk around the room, and gradually about the house, but should not be exposed to cold, or allowed to attempt more than moderate muscular efforts. His bowels should move daily, and, if a drug is needed, aloin or cascara should be used. Children may be given milk of magnesia or some other simple laxative. It should be emphasized that a modification in diet is necessary according to the character of the digestion and the condition of the tongue. A liberal consumption of milk is often not well tolerated by adults, but a little careful investigation will determine the diet best adapted to the individual patient.

If the albumin and casts entirely disappear from the urine in six or eight weeks, the patient may be considered cured. However, severe exercise and chilling should be guarded against, lest the injured kidneys again be impaired.

If the albumin and casts continue, or if the twenty-four hour urine shows continued diminished excretion of salts or solids, although the blood may not show retained nonprotein nitrogen, the treatment of the case becomes that of a chronic nephritis.

Gentle massage may be employed as soon as the kidneys are functioning well, but it should not be resorted to if the secretion of the kidneys is insufficient. The amount of exercise the patient may take depends entirely on the efficiency of the kidneys in throwing off the waste material; if there is still danger of nitrogen retention, exercise should be limited. Warm baths and the milder hydrotherapeutic measures (no cold water and no chilling) are of advantage in keeping the skin in a healthy condition and in causing a good circulation of the blood on the surface of the body.

The prognosis of acute nephritis depends on its cause, but a case never should be considered hopeless. The patient may die, but with proper treatment he may recover, even from severe uremia, convulsions and coma. In acute nephritis there is no stage in which every effort possible should not be made to combat the disease and aid recovery.

A scarlatinal nephritis is more serious than that caused by many other conditions, and is apt to be insidious in development, occurring not only days, but weeks after the acute scarlatinal symptoms have subsided. Uremia may not develop even with temporary suppression of the urine; on the other hand, it may develop almost without premonitory symptoms, although ordinarily these symptoms appear hours or days before uremia occurs.

If the kidney secretion contains a great deal of blood, gelatin and lime water may be prescribed. Gallic acid at times apparently diminishes the loss of blood and albumin by the kidneys. If the blood pressure is low and the heart weak, congestion of the kidneys may be due to passive congestion, which may be alleviated by the administration of digitalis. Its action should be watched, as in impaired kidneys it may seriously overact, causing vomiting, headache, too high tension, and sometimes symptoms of uremia. On the other hand, it may be the drug required to relieve some of the congestion and to stop the bleeding. This type of acute nephritis, almost a passive congestion nephritis, not infrequently occurs in cardiac lesions, especially in valvular defects.

If the blood pressure is not very high, suprarenal gland extracts may be of value in stopping the loss of blood by the kidneys, especially in children. A crushed tablet, swallowed with water, every six hours for two or three days is a fair dose.

If the blood pressure is very high, nitroglycerin may be given in doses sufficient to reduce it somewhat; $\frac{1}{100}$ grain given once in three hours to an adult seldom fails to have this desired effect. If the hypertension in an adult is menacing, venesection may be employed; this may also be indicated if severe uremic symptoms, convulsions or coma are in evidence.

As several times stated, diuretics, as such, are generally contraindicated throughout the course of acute nephritis; even in the convalescent stage, if used at all, only the simplest diuretics should be administered with the greatest caution.

If the circulation is poor during convalescence, the amount of urine being insufficient, for this reason alone, and if digitalis is deemed inadvisable or inefficient, caffein in some form is the drug to be preferred, perhaps one of the best forms being theobromin and sodium salicylate, in doses of from 0.5 to 1 gm., in plenty of water. If the patient has reached the stage in which it is advisable to give caffein, there is no reason why a cup of coffee should not be given in the morning, or in the morning and at noon.

Throughout the course of acute nephritis, if the patient is comfortable he will probably sleep well. However, if he is nervous and irritable and cannot sleep, sleep must be induced in order that he may have the bodily and mental rest required. Synthetic hyp-

notics should rarely be administered, unless the dose is small, such as 0.2 gm. of veronal-sodium, or 0.05 gm. of luminal, since most synthetic drugs irritate the kidneys during excretion. If the patient is irritable, nervous and excited and the circulation is good, an adequate dose of chloral, 0.5 gm. perhaps, or 1 or 2 gm. of sodium bromid, may be used as a hypnotic, provided such strong drugs are deemed advisable.

Opium or any of its alkaloids are generally to be avoided in acute nephritis. However, if pain is acute it may be given, as acute pain can do more harm through circulatory shock, mental anguish and muscle restlessness than can possibly be done by a proper dose of morphin or codein.

If acute nephritis develops in the course of some severe infection, the treatment necessary to combat that infection should be given, modified in the manner suggested by the condition of the kidneys. All vaccine injections would probably be contraindicated.

As soon as the patient is convalescent, warm baths should be taken regularly, to keep the skin in perfect health and to relieve internal congestions. When convalescence is well established, if it is during the cold season of the year, the patient should, if possible, go to a warmer climate, and remain there until the kidneys have again resumed their normal activities.

4. The fourth indication, namely, the prevention of uremia, has frequently been met by proper management of the other indications. The treatment of this condition will be outlined later.

(*To be continued*)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

TABLETS SODIUM CHLORIDE AND CITRATE-SQUIBB (DR. MARTIN H. FISCHER).—Each Tablet contains sodium chloride 1 Gm. and sodium citrate 2 Gm.

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by E. R. Squibb and Sons, New York.

OPTOCHIN.—Ethyl-hydrocupreine.—Optochin (Base).—$C_{19}H_{21}N_2OH.O.C_2H_5$.—A synthetic derivative of cupreine, $C_{19}H_{22}O_2N_2$, an alkaloid occurring together with quinine in the bark of *Remijia pedunculata*. Ethyl-hydrocupreine is closely related to quinine, differing from the latter in containing two more hydrogen atoms and an ethoxy in place of a methoxy group.

Actions and Uses.—Ethyl-hydrocupreine has the antimalarial and anesthetic action of quinine. Toxic symptoms, however, such as tympanitis, deafness, amblyopia or amaurosis (retinitis) are more liable to occur than with quinine; while these are generally transient, retinitis may result in permanent impairment of vision (in one case amaurosis resulted from the administration of two 0.25 Gm. doses). This demands caution in the use of the drug. Ethyl-hydrocupreine has a specific bactericidal effect on the pneumococcus in vitro, and it exerts a protective and curative action in animals experimentally infected with virulent strains of pneumococci. Clinical investigation indicates that the drug may be of value in the treatment of lobar pneumonia when the proper dosage is determined. (Owing to the toxicity of the drug, it seems that the amount which can safely be administered to man is limited. For adult males, 1.5 gm. by mouth in twenty-four hours, divided into at least three doses, may be considered safe, but even in this dosage slight toxic effects have been seen. The drug may be given intramuscularly, but it is liable to be irritant. Intravenous administration seems contraindicated.)

While the internal use of ethyl-hydrocupreine is in the experimental stage and the danger of visual disturbance (amaurosis) makes caution in its use important, reports indicate that the drug is of decided value in the treatment of pneumococcic infection of the eye (ulcus corneae serpens). It is too soon to give a definite opinion as to the actual value of the drug in curing pneumonia.

Dosage.—For ophthalmic use a freshly prepared 1 to 2 per cent. ointment or solution in a bland fatty oil.

Manufactured by Vereinigte Chininfabriken, Zimmer and Co., Frankfort a. M., Germany (Merck and Co., New York). U. S. patent No. 1,062,203 (May 20, 1913; expires 1930). U. S. trademark No. 99,822.

Optochin is a white or faintly yellowish, amorphous, odorless powder having a bitter taste.

Optochin is nearly insoluble in water; easily soluble in alcohol, ether and chloroform; easily soluble in dilute acids; very slightly soluble in petroleum ether.

If about 0.1 Gm. of optochin be dissolved in 20 Cc. of water by the aid of a few drops of diluted sulphuric acid, 1 Cc. of bromine water added and the solution made alkaline with ammonia water, a green color should be produced.

If about 0.5 Gm. of optochin be dissolved in 10 Cc. of water by means of a few drops of diluted sulphuric acid, the solution made alkaline with sodium hydroxide solution and the mixture boiled, no odor of ammonia should be produced.

If 0.1 Gm. of optochin be dissolved in 20 Cc. of water by the aid of a few drops of diluted sulphuric acid, a blue, fluorescent solution should be produced; if 0.3 Cc. of tenth-normal potassium permanganate be added to this solution the violet color should persist for at least one minute (*quinine and some other impurities*).

If 0.01 Gm. of optochin be dissolved in 0.2 Cc. of strong sulphuric acid, not more than a slightly greenish-yellow color should be produced (*readily carbonizable organic impurities*).

If from 0.5 to 0.8 Gm. of optochin be weighed and incinerated, not more than 0.1 per cent. of residue should remain.

OPTOCHIN HYDROCHLORIDE.—Ethyl-hydrocupreine hydrochloride.—$C_{19}H_{22}N_2.OH.O.C_2H_5.HCl$.—The hydrochloride of ethyl-hydrocupreine.

Actions and Uses.—The same as those of optochin, which see.

Dosage.—For application to the eye and instillation into the conjunctival sac a freshly prepared 1 to 2 per cent. solution is used.

Manufactured by Vereinigte Chininfabriken, Zimmer and Co., Frankfort a. M., Germany (Merck and Co., New York). U. S. patent No. 1,062,203 (May 20, 1913; expires 1930). U. S. trademark No. 99,822.

Optochin hydrochloride is a white, or faintly yellowish-white, crystalline, odorless powder having a very bitter taste.

Optochin hydrochloride is soluble in two parts of warm water forming a neutral or faintly alkaline solution; soluble in five parts of alcohol; very soluble in chloroform; almost insoluble in ether or petroleum ether.

If to 5 Cc. of the aqueous solution of optochin hydrochloride (1:10) 1 Cc. of silver nitrate solution be added, a white, curdy precipitate should be produced which is insoluble in nitric acid.

If to 5 Cc. of the aqueous solution of optochin hydrochloride (1:10) an excess of sodium hydroxide solution be added, a white, curdy precipitate should be produced (distinction from *cuprein*, which is soluble in an excess of sodium hydroxide).

If 0.1 Gm. of optochin hydrochloride be dissolved in 20 Cc. of water and 0.3 Cc. of tenth-normal potassium permanganate be added, the violet color should persist for at least one minute (*quinine salts and some other impurities*).

If 0.1 Gm. of optochin hydrochloride be dissolved in 0.2 Cc. of sulphuric acid not more than a slightly greenish-yellow color should be produced (*readily carbonizable organic impurities*).

If from 0.5 to 0.8 Gm. of optochin hydrochloride be weighed, the salt dissolved in 20 Cc. of water, the solution made slightly alkaline with ammonia water, the mixture shaken successively with 15, 10 and 5 Cc. of chloroform, the fractions of solvent united, allowed to evaporate spontaneously, the residue treated with 2 Cc. of absolute alcohol, the solution evaporated, the residue dried to constant weight at 100 C. and weighed, the weight of the residue (ethyl-hydrocupreine) should correspond to not less than 90 per cent. of the weight of material taken.

Cuts of Meat and Calorific Value.—The kind or cut of meat used does not usually make much difference in the fuel or calorific value. There is a popular belief that porterhouse steak and other choice cuts of beef represent the highest form of nourishment to be obtained. This is, however, a misconception; the fuel value of brisket or ribs of beef as well as mutton and lamb all exceed the much desired tenderloin steak. According to Langworthy, expert in charge of nutrition investigations of the U. S. Department of Agriculture, "for all practical, every day purposes it may be considered that the protein obtained from a given weight of meat differs very little either with the kind of meat or the cut."—*Weekly Bull. Dept. of Health*, Newark, N. J.

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SATURDAY, MARCH 3, 1917

THE NATURAL IMPERFECTIONS OF THE BODY AND THE LIMITATIONS OF SCIENCE

It is not uncommon to find persons who are confronted with some problem pertaining to the needs of the body making references to "nature," or human instincts, or physiologic habits in explanation of the mysteries of our living organism. The author of one of the once familiar Bridgewater treatises, in which the discoveries of science were considered with reference to "natural theology," wisely remarked that "man not only sees means directed to certain ends; but ends accomplished by means, which he is totally unable to understand. He also sees, everywhere, things, the nature, and the end of which are utterly beyond his comprehension; and respecting which, he is obliged to content himself with simply inferring the existence of design." [1]

Are we bound, in contemplation of this situation, to conclude that whatever nature provides is perfect in construction and function? The human body needs not to be conceived as a haphazard product of chance evolution; on the other hand it is not necessarily a disparagement for even the most devout person to realize that "nature" is often far from perfect. Richard C. Cabot[2] has recently expressed this trenchantly by saying:

> We do not expect that our souls will be perfect. Our bodies are a part of nature and need not be assumed to be perfect. Presumably bodies and souls have a certain amount of freedom whereby they can go wrong. I see the body, like a great deal of the rest of nature, heroically trying to do right, often with extraordinary success, sometimes with pitiful failure; and I find this in no way irreconcilable with a belief in God. But I should find it impossible if I did not recognize that element of freedom to go wrong which I think is present in the whole of nature, and which I think makes nature sometimes beautiful, sometimes cruel, sometimes badly contrived, and sometimes marvelously ingenious.

Nor is instinct such an unerring guide that it can be trusted to direct us inevitably into the safest channel of physiologic behavior, as is often urged, particularly in respect to diet. What is interpreted as instinct is sometimes merely an expression of custom, habit or usage. We are told that a man is a creature of habits; he is quick to acquire new ones when his environment affords the opportunity, and he is prone to cling to the old ones when they minister to his sense of taste. Habits and cravings are far from being reliable indexes of physiologic requirements. Because man has maintained himself through the ages without precisely such scientific guidance as is available today it does not follow, as some are wont to state, that "scientific discoveries in the field of dietetics are academic rather than practical." Dr. Percy G. Stiles[3] has admirably spoken the words of wisdom:

> A judicial mind will mold to a middle course. There need be no discouragement because the requirements are so many; on the other hand, it is not the part of wisdom to discount all that has come from the chemist's patient labor. Even though mankind has survived, we can conceive that human standards may be bettered. If this is true of the race, it is much more conspicuously true of ill nourished individuals. We must consider in what respects the conditions of modern life have modified habits of diet, and whether, in any instances, the changes have been for the worse. The case is paralleled by that of the man who begins to consider the possibilities of disease. There are so many maladies to be thought of that the retention of health seems like keeping one's balance on a tight rope. Yet, if the preservation of health is really a tight rope performance, there is a factor which gives constant support, the remarkable stability of health in the normal subject—his constitution—which is like a gyroscope in its steadying effect. Here, too, it is rational not to ignore the dangers, but at the same time to recognize our relative security.

Let us break away from the assumption that there is anything incongruous in the fact that nature as expressed in the human organism is far from perfect; or that the incompleteness of the information of the present deprives it of any value for the improvement of a tolerably well conducted human mechanism. There is no absolute truth knowable to the human mind.

BETTER PUBLIC HEALTH ADMINISTRATION FOR SMALL COMMUNITIES

It is quite generally conceded that the public health is more carefully safeguarded in metropolitan districts than in small cities, villages and rural communities. As a result we frequently find a higher incidence of contagious diseases, and especially of typhoid fever, in the small villages and on the farm than in the congested districts of large cities. It has been shown also that the health of schoolchildren in cities as a rule is better than that of the children in rural districts. In most rural districts and small cities and villages little or no provision is made for public health work, whereas in most large cities fairly adequate annual appropriations are made for this purpose. Many dwellers in small cities and villages are beginning to realize the failures in this direction. The chief difficulty heretofore has been to find a way to finance an

1. Prout, W.: Chemistry, Meteorology, and the Function of Digestion, 1834, p. 24.
2. Cabot, R. C.: A Layman's Handbook of Medicine, 1916, p. 1.
3. Stiles, P. G.: An Adequate Diet, Harvard University Press, 1916.

efficient health department for such communities. It is evident that a city of from 2,000 to 3,000 inhabitants hardly would see its way clear to hire a full-time health officer, a school nurse, and a dairy and milk inspector. A small community could hardly make use of all the time of a health officer and school nurse, and hence there would seem to be needless extravagance. This difficulty has recently been overcome by two successful experiments in cooperation of neighboring small cities (at Wellesley, Framingham, Needham and Melrose, Mass., and LaSalle, Peru and Oglesby, Ill.,) whereby it is made possible jointly to support a full-time health officer and assistants and to make proper use of their whole time.

The second annual report of the Hygienic Institute, the Department of Health for LaSalle, Peru and Oglesby, Ill., which has just appeared, shows what can be done by cooperative effort. Prior to the establishment of the cooperative health department, these three cities had no more in the way of machinery for proper health administration than most other cities ranging in population from 5,000 to 12,000 inhabitants. Each had a part-time health officer, two of whom received $25 a month and one $35. With such meager salaries not much service could be expected, and no attention was paid to milk and dairy inspection, medical inspection of schoolchildren, epidemiologic investigation or collection of vital statistics. Epidemics of smallpox, diphtheria and scarlet fever were of frequent occurrence, and in many instances the patients were not isolated, but could be seen walking the streets if not too ill to be confined to their beds. Diphtheria patients were practically always released as soon as the membrane disappeared, often in less than one week from the time of onset, and scarlet fever patients were quarantined only from two to three weeks, according to the severity of the case. With the advent of the cooperative health department, these conditions were radically changed. Diphtheria patients are now quarantined until two negative cultures from the throat and nose are obtained on two consecutive days, and scarlet fever patients are quarantined for a minimum of five weeks. A milk inspection ordinance was passed and dairies and milk supplies are being systematically inspected and scored. Nearly all of the milk is now delivered in steam sterilized bottles and over half of it is pasteurized, whereas prior to the establishment of the cooperative health department most of the milk was dipped from cans on wagons and was not pasteurized. All dairy cows have been tuberculin-tested, and all reactors have been disposed of from those herds whose yield is not pasteurized. All grocery stores, meat markets and restaurants are being inspected and scored, and a vigorous campaign has been instituted against the insanitary outdoor privy. A medical school inspector and two school nurses have been employed, and close watch is kept over the schoolchildren lest any may come to school while suffering from a contagious malady. Physical examinations are made of all schoolchildren both in the parochial and the public schools once every two years, and all defects found are recorded on a proper card. All serious defects which might be a handicap to the child are reported to the parents with the suggestion that the child be taken to the family physician or dentist for proper treatment. All cases are followed up by the school nurses, and in many instances in which the parents are unable to provide proper treatment, free treatment has been obtained through charity. A free dental clinic has been established at which all schoolchildren whose parents cannot afford to pay for the services of a dentist receive dental care free of charge. An infant welfare nurse devotes all of her time to the care of infants and of mothers and prospective mothers, and one nurse devotes half her time to antituberculosis work.

The results of these measures are just beginning to be noticeable. During the first year there were forty-seven deaths from diphtheria and scarlet fever, whereas during the second year there were only sixteen deaths from these two diseases. During the first nine months of the third year, up to Feb. 1, 1917, there have been but nine deaths from diphtheria and scarlet fever. The total death rate for the entire district was 15 per thousand during the year ending April 30, 1915, and 13.9 per thousand during the year ending April 30, 1916.

The total expense of the department, which serves approximately 30,000 people, has been $16,350 a year — certainly a profitable investment.

THE VENEREAL DISEASE PROBLEM—V

The Problem in Germany

Interest in the problems of the venereal diseases in Germany has been stimulated by the war, and efforts to control these diseases have redoubled. Venereal diseases among soldiers have increased greatly since the war began, and there has been the usual necessity of war time of combating in every way possible the great amount of disability among soldiers which the venereal diseases cause. The increased efforts for the control of the diseases have been extended not only to the part of the population which is in military service, but also to the civilians both in the military districts and elsewhere. The German efforts have taken two directions: first, the Continental course of regulating prostitution and rendering it as little dangerous as possible, and, second, efforts to combat the venereal diseases directly.

In military districts the most stringent regulation of prostitution has been effected, and outside of the military districts measures for the control of prostitution have been more rigorously enforced. Among German authorities, such as Neisser and Blaschko, there has

been marked difference of opinion as to the sanitary value of regulation and examination of prostitutes. These measures are admitted by their advocates to be of only relatively small usefulness — certainly not of sufficient value to rekindle any hope of great benefits from them. German experts give the regulation of prostitution an entirely minor — if not, indeed, a negligible place — among the measures for fighting the venereal diseases.

In Germany, as elsewhere, great stress is being placed on diagnosis and treatment for combating these diseases. The insurance companies, under which so large a proportion of Germany's industrial population are cared for, are furnishing general facilities for treatment of these diseases along the same lines that are being followed elsewhere. Government measures for providing universal opportunities are in process of establishment. These provisions look to the universal care of the venereal diseases — by the state without cost for the poor, or by insurance companies, or at the expense of the individual in case of the prosperous. The general plans are similar to those which have been followed in England.[1] It is recognized that the weak point in this plan of treatment outside of the armies in Germany is the lack of authority to compel patients to continue treatment until they are freed from infectious dangers to others.

The recommendations for combating venereal diseases of a committee appointed to study this question by the Medical Association of Munich were recently reviewed in The Journal.[2] This committee presented a report which proposes to remedy the failure of patients to pursue treatment by requiring compulsory treatment as long as there is need for it. The recommendations of the Munich committee closely conform to the regulations which have recently been put in force in Western Australia. They recommend compulsory treatment along the lines of the Australian act.[3] Patients must seek treatment immediately on the appearance of venereal disease. Suspects may be examined by boards of health and compelled to take treatment. Checks are provided so that patients who fail voluntarily to continue treatment will be compelled to do so, and, as in the Australian act, heavy penalties are provided for the failure of patients or physicians to live up to their responsibility under the plan. The recommendations of the Munich committee go still farther, and urge stringent measures for complete notification of the venereal diseases; but they recommend that the records of such notifications be provided with all possible safeguards of secrecy. The recommendations of this committee go much farther than the general sentiment of the German profession. German medical authorities are agreed on the value of providing opportunities for treatment, and appreciate the need for measures to compel continuance of treatment; but apparently there is wide difference of opinion as to the desirability and practicability of notification of the venereal diseases.

The German efforts differ from others we have considered in placing important emphasis on the value as a sanitary measure of the personal prophylaxis of syphilis. Every effort is made to see that personal prophylaxis is carried out in the armies, and it is also being utilized among the civilian population. Where previously the condom was under legal ban as a means of preventing conception, its use to prevent venereal infection is widely and frankly advocated. Calomel ointment and other medicinal preparations for preventing infection are being distributed to soldiers and the public, and leaflets are being furnished which describe the methods of use of these devices. Neisser took the position before the Deutsche Gesellschaft für Bekämpfung der Geschlechtskrankheiten at its meeting in 1915 that measures of personal prophylaxis were of essential importance in the fight against the venereal diseases.

Much anxiety is being shown in Germany concerning the danger of the spread of the venereal diseases by soldiers after their discharge, and vigorous methods are proposed for combating this danger. Neisser and others have urged that every soldier, officers included, should at the end of the war be given a Wassermann test, and an equally comprehensive plan is suggested for detecting gonorrhea among soldiers before their discharge. Blaschko's proposals, though less extreme, represent the last degree of radicalism when compared with anything of this sort that has ever been done before. He proposes, before discharge, examination of men who have suffered during enlistment from venereal diseases; retention under military control of men with active cases until a cure is effected; transference to the insurance companies for observation, and, if necessity should arise, for treatment, of men who have had venereal diseases during the war, but in whom the disease is no longer active. Many have urged the continuance of the severe restrictive measures which have been instituted and proved valuable under military rule, such as severe penalties for intercourse when persons are infected with venereal disease, and the suppression of quackery. There is the same insistence on the continuance of the thorough military measures for diagnosis and treatment.

Germany has thus become active in efforts at controlling the venereal diseases. She is placing her reliance chiefly on the efficacy of universal provisions for diagnosis and treatment, but is going farther than Anglo-Saxon countries in promoting measures of personal prophylaxis. Drastic measures, which pay no attention to the inclination of the individual, have been carried out among soldiers and in military districts,

1. The Venereal Disease Problem, III, The English Venereal Disease Act, editorial, The Journal A. M. A., Feb. 17, 1917, p. 550.
2. Combating Venereal Diseases, Social Medicine, Medical Economics and Miscellany, The Journal A. M. A., Jan. 27, 1917, p. 306.
3. The Venereal Disease Problem, IV, Western Australia's Effort to Control the Venereal Diseases, editorial, The Journal A. M. A., Feb. 24, 1917, p. 639.

and there is a call for extension of such measures to the civilian population after the war; but there is evidently difference of opinion among German authorities as to whether such measures will be practicable even among the disciplined citizens of Germany after the stress of war has passed.

THE POLLUTION OF STREAMS AND ITS INTERSTATE CONTROL

The obvious difficulties which stand in the way of preventing excessive stream pollution in all thickly settled parts of the world are in some respects peculiarly great in the United States. The volume of water in the large rivers, the rapid growth of population in certain centers, and the extension of water supply and sewerage facilities are factors which explain in part the situation now facing us. For a time the size of American streams made such pollution as existed a matter of apparent insignificance except so far as water supply was concerned. But the amazingly rapid growth of population and manufacturing, combined with the popularity of the American bath room and water closet, has brought into existence an enormous quantity of putrescible fluid that is most easily got rid of by discharge into the nearest body of water, lake, river or sea.

One result of the natural attempt to dispose of sewage by dilution has been the overloading of many streams, large and small. The suddenness with which this has occurred and the glaring evils which have been produced have led almost to a panic in some quarters. It has even been demanded that all sewage be kept out of all water courses or, if admitted, that it be so purified as to be no worse in quality than the water with which it mingles. Extreme action of this sort would be difficult on economic and other grounds, and experienced students of stream pollution are a unit in recognizing the impossibility of restoring our rivers to a state of pristine purity. Even if all practicable measures of protection are put in force, the streams in populous regions can never be regarded as fit sources of water supply without purification.

On the other hand, stream pollution cannot be allowed to proceed unchecked. Not only is the conservation of our natural water courses in an attractive condition highly desirable from the standpoint of recreation and esthetic gratification, but unless pollution is restricted within certain definite limits many streams will become unavailable as sources of water supply. No water purification plant can be expected to function properly if an undue burden is placed on it.

While competent authorities have long recognized the necessity for control of stream pollution, a serious obstacle to such control has existed in the lack of cooperation between the several states and the absence of centralized power to enforce cooperation. A badly polluted stream crossing the boundary from one state into another may reach the citizens of the latter state robbed of its dissolved oxygen and loaded with offensive and even dangerous materials. If the citizens of the state invaded by the polluted river can draw on no other readily available source of water supply, to say nothing of their other interests in the stream, they plainly have a cause of grievance. By no direct act of their own, or of their state or national government, they are deprived of a certain right in the utilization of their natural surroundings.

The methods most suitable for the proper regulation of such interstate relations are not to be settled offhand, but the problem certainly calls for prompt and serious consideration. If nothing is done, if the whole situation is allowed to drift, parts of the country in the near future will suffer acutely, and in the long run remedial measures will prove difficult and costly. Phelps[1] has called attention to the significance possessed by the report of the International Joint Commission on the Pollution of Boundary Waters in pointing a way to the solution of the problem of stream pollution within the United States. It might have been anticipated that the regulation of pollution in the international boundary waters in which both the United States and the Canadian governments are interested would prove especially difficult, but this is apparently not to be the case. In the effort to discover what remedies for preventing injury to health and property are "possible and advisable," the international commission has enlisted eminent expert advice, and under careful supervision has carried on an extensive series of bacterial examinations. It is interesting to note that one outcome of the work undertaken by the commission has been the fixing of a standard of permissible pollution in the international waters. The limit of bacterial contamination is considered to be exceeded if the annual average number of *B. coli* is higher than about 500 per hundred cubic centimeters, or, expressed in other terms, "the limit of permissible bacterial pollution shall be decreed to have been exceeded when the effective dilution . . . shall be less than 4 cubic feet per second per capita of contributing population, based upon mean river stages during the season May to September, inclusive."

The report is important, not merely for its specific practical recommendations, but also, as Phelps points out, for the suggestions which it offers as to the way to conserve and harmonize the interests of the several states in the interstate streams which traverse their territory. Many streams are used and will continue to be used for the diverse purposes of water disposal and water supply. It ought to be possible for the states of the union to cooperate with the national government to obtain information about the numerous, involved and often technically obscure questions, that justice may be done all interests, and especially that the public

1. Phelps, E. B.: Control of Pollution of Streams, Pub. Health Rep., 1917, **32**, 167.

health shall receive no injury. Purely legal procedures based sometimes on technicalities and often on insufficient knowledge seem hardly adequate. Steps should be taken at once looking toward some sort of coordinated scientific control of stream pollution. In some instances groups of states might conceivably act together, but probably a national commission or some other central federal body, such as the United States Public Health Service, would be more effective. Prompt action is important.

Current Comment

IMPLIED WARRANTY IN THE SALE OF FOOD: A ZOOLOGICAL VIEW OF "DISEASED" MEATS

Elsewhere in this issue appears an article by Stiles[1] in which he discusses, from a zoological point of view, certain phases of the "implied warranty" in the sale of meat. The views advanced are not altogether in harmony with certain legal decisions which have been made by the courts of this country, but these views were not before the courts which made the decisions. If courts generally admit the validity of the views expressed by Professor Stiles, a number of medicolegal precedents, as applied to meats, will be overturned. In brief, Stiles maintains that the terms "diseased meat" and "meat from diseased animals" in the food laws should be interpreted as meaning "likely to produce disease in man," rather than in the popular sense of the terms. Proceeding further, he submits that the "implied warranty" assumed by the vendor is predicated on an implied obligation on the part of the purchaser that the food will be "properly prepared" for reception into the human stomach, and if the purchaser fails in this the vendor cannot be held responsible. Next, the claims that since no method of inspection is known on the basis of which a butcher can say that pork is free from trichinae, fresh, unsafeguarded pork is not a proper article of food unless it is properly cooked, and hence the obligation of preventing trichinosis rests on the purchaser, not on the vendor; if, however, the vendor is assumed to guarantee that pork does not contain trichinae, this assumption implies that the vendor is simply making a bet to this effect, and therefore he is not assuming a legal debt. The United States government has repeatedly issued warnings to the public that pork should be properly cooked in order to safeguard the consumer against trichinosis, but in four or five states in which cases have come to trial, the vendors have lost in the courts. Quite recently several cases have been tried in which the views advanced by Stiles were submitted in the testimony. In one case, part of his testimony was excluded by the trial judge, and the jury decided against the vendor; in other cases in which the judges admitted Stiles' testimony, the juries decided in favor of the vendor. The medicolegal status of trichinosis in this country is now in the making, and it will be important as well as interesting to see the position courts take in regard to the line of testimony recently advanced. Should the courts generally hold in favor of the vendor, it would mean shifting a part of the burden of governmental responsibility for the health of the individual on himself in a greater measure than has heretofore been proposed. Popular education and the facilities of distribution of dependable information relative to personal and public hygiene would have to be further extended to take the place of governmental protection at the source. To steer between the possible dangers of actually harmful food on the one hand and, on the other, the hardships which may result from excluding available foodstuffs which, if properly treated, would be unquestionably wholesome, will call for intelligent consideration rather than hasty generalities, either legal or academic. Without cooperation, the government cannot be expected to guarantee life, health and happiness; with cooperation, it may help the individual intelligently to help himself.

1. Stiles, C. W.: Trichinae in Pork and Nematodes in Butterfish, THE JOURNAL A. M. A., this issue, p. 685.

LIPEMIA IN DIABETES

Bloor's valuable contribution to our knowledge of blood lipoids ("fats") in diabetes and their probable significance, to which detailed reference has been made in THE JOURNAL,[1] has an unanticipated importance for the management of diabetes, and deserves careful study from this point of view. He found that in carefully treated cases, particularly when complete or partial fasting was employed, lipemia in the sense of a milky or cloudy serum never was present. The origin of lipemia, when this occurs, clearly appears to be due to the presence of fat in the diet. Bloor accordingly has this to say regarding the application of his findings in the dietotherapy of diabetes:[2] The dietary treatment of diabetes was until recently to withhold carbohydrate and make up the caloric deficiency with protein and fat. The resulting overwork of the fat-burning mechanism would be expected to cause, in some cases at least, a partial failure of the mechanism with an accumulation of fat and its metabolites in the blood. A contributing factor is the lack of available carbohydrate, without which complete burning of the fatty acids does not seem to be possible. The high lipoid values when there is no lipemia may probably be regarded as an earlier manifestation of the same partial failure of the fat metabolism. The mechanism is still working in an approximately normal manner, since the relations between the lipoids are normal, but the accumulation of the metabolites has begun. In the actual lipemia the mechanism has fallen behind with its work, and the raw materials have accumulated until they can no longer be carried in solution in the plasma. Even at this time not all parts of the mechanism have failed; this is evident from the increase of cholesterol, which keeps pace with the fat. That part of the process, however, which has to do with the formation of lecithin from fat has apparently failed, and possibly

1. Blood Lipoids and Diabetes, editorial, THE JOURNAL A. M. A., Nov. 25, 1916, p. 1602.
2. Bloor, W. R.: The Lipoids ("Fat") of the Blood in Diabetes, Jour. Biol. Chem., 1916, **26**, 428.

this failure may be the underlying cause of the lipemia. Under former conditions of treatment, the chances of recovery of a diabetic with lipemia were generally regarded as poor, as might be expected if the foregoing explanation of the cause of lipemia were true, since the continued diet of fat involved the overloading of an already failing mechanism. No better claims are needed to indicate the importance of a modification of treatment to include the control of fat as well as the carbohydrate in the diet. Considerable attention has recently been given to the plan of fasting the patient until the urine is sugar-free, and then building up a tolerance for carbohydrate and protein.[3] An added novelty in severe, long standing and complicated cases now involves not beginning the fast until after a preliminary dietary treatment consisting in first removing the fat from the diet, then reducing the protein, and leaving the exclusion of the carbohydrate as the final step in the procedure. Fat is not added to the diet subsequently until considerable protein tolerance is established. The value of these innovations based on scientific experience remains to be ascertained in clinical practice.

THE PHARMACOLOGY AND THERAPY OF THE URETER

The contributions which modern experimental pharmacology can make to practical therapeutics, either by direct transfer of its results or by correction of irrational procedures of treatment, are illustrated by some of D. I. Macht's[4] recent studies on the pharmacology of the ureter. He found that the opium alkaloids in respect to their action on the ureter, in vitro and in corpore, may be divided into two groups, according to their chemical structure — the pyridin-phenanthrene group, of which morphin and codein are the chief representatives, and the benzyl-isoquinolin group, of which the most important members are papaverin and narcotin. According to Macht, morphin and its allied alkaloids increase the contractions and produce a greater tonicity of the ureter, whereas papaverin and other members of its group produce a slowing or total inhibition of the contractions and relaxation of the tonus. In opium or the total alkaloids of opium represented by pantopon (pantopium hydrochloricum), the effect of the benzyl-isoquinolin group preponderates. These statements have been verified for the human ureter by experiments on excised parts obtained after surgical operations in cases of nephrectomy. The pharmacologic findings at once question the wisdom of the conventional administration of morphin to relieve the excruciating pains of renal or ureteral colic. Clinical experience teaches that the ordinary small doses of this drug are almost always ineffectual, and even large ones may be of little avail. Macht's experimental observations on the opium alkaloids now throw light on this subject. Ureteral colic is due to spasmodic contractions of the ureter caused by the irritating calculus. As morphin increases the spasm it is likely to aggravate the condition. The only relief it can be expected to give is through the narcotic action of larger doses centrally on the brain. Chloroform produces relief because it not only quiets the brain but also relaxes the spasm of the ureter. The same is true of the alkaloid mixture in opium and of papaverin — hence the use of opium or papaverin seems more rational than that of morphin in ureteral colic. Furthermore, the slighter toxicity of papaverin, its tonus lowering power, and its local analgesic properties suggest its local application in spasmodic conditions of the ureter. This can be accomplished with a catheter through the cystoscope. A limited experience on man encourages the resort to the plan outlined as a possible remedial innovation of decided merit.

3. Compare Joslin, E. P.: Am. Jour. Med. Sc., 1915, **150**, 485.
4. On the Pharmacology of the Ureter, III, The Action of the Opium Alkaloids, Jour. Pharmacol. and Exper. Therap., 1916, **9**, 197.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Clinic Opened.—February 16, the San Diego Diagnostic Group Clinic of the John P. Scripps Memorial Foundation invited the medical profession of San Diego and Imperial counties to the opening of the clinic in its new building.

Stanford University Popular Lectures.—The lectures for March in the courses of popular lectures to be given in Lane Hall, San Francisco, under the auspices of the Stanford University Medical School, are as follows:

March 9: "The Problem of Race and Race Prejudice," Prof. Arthur W. Meyer, Professor of Anatomy, Stanford Medical School.
March 23: "Prevention of Blindness" (Illustrated), Dr. Hans Barkan, Clinical Instructor in Ophthalmology, Stanford Medical School.

Personal.—Dr. Sherman T. White, Redding, has been appointed county physician of Shasta County.——Dr. Frederick P. Gay, Berkeley, has been appointed a member of the hygiene committee of the National Research Council.——Dr. William C. Voorsanger has been elected secretary, and Dr. Attilio H. Giannini has been reappointed executive secretary of the San Francisco Association for the Study and Prevention of Tuberculosis.——Dr. Daniel W. Zirker, Merced, has been appointed county physician of Merced County.——Dr. Timothy Lyman has been appointed assistant superintendent of the San Francisco City and County Hospital, succeeding Dr. Harold D. Barnard (resigned).

GEORGIA

Hospital Notes.—The Griffin Hospital is to be managed hereafter by a board of three, one to be selected by the commissioner of Spaulding County, one by the city of Griffin, these two to select a third member of the board.

New Societies Organized.—Physicians of Terrill County met at Dawson, January 30, and reorganized the Terrill County Medical Society, electing Dr. Owen T. Kenyon, Dawson, president, and Claud G. Hooten, Bronwood, secretary-treasurer.——The Second District Medical Association was recently organized at Thomasville, and Dr. Everett Daniel, Moultrie, was elected president; Dr. William J. Jennings, Thomasville, vice president, and Dr. Erle T. Newsom, Camilla, secretary-treasurer.

Personal.—Dr. Charlton C. Whittle has been elected district commissioner of health for Irwin and Tift counties in place of Dr. Arthur G. Fort, Atlanta, resigned.——Dr. Cyrus W. Strickler has been elected president of the medical board of Grady Hospital, Atlanta; Dr. Frank K. Boland, vice president, and Dr. John W. Funke, secretary.——Dr. William N. Adkins has resigned as medical director of the Atlanta public schools.——Dr. George L. Harman has been appointed a member of the board of managers of the Savannah Hospital.——Dr. F. H. Letson has been elected mayor of Grantville.

State Sanatorium Trustees Appointed.—The governor announces that the following physicians have been appointed

on the board of trustees of the Georgia Tuberculosis Sanatorium, Alto, for terms of four years, beginning January 29: Drs. Craig Barrow, Savannah; William H. Hendricks, Tifton; Charles H. Richardson, Oglethorp; Charles A. Dexter, Columbus; Thomas R. Whitley, Douglasville; Mallie A. Clark, Macon; Howard E. Felton, Cartersville; Isham H. Goss, Athens; William I. Hailey, Hartwell; Jefferson Davis, Toccoa; W. D. Jennings, Jr., Augusta; David E. McMaster, Tenille; J. P. Prescott, Lake Park; Gordon Burns, Douglas, and Jackson M. Munez, Swainsboro.

ILLINOIS

Physicians Swindled.—Indictments were returned, February 21, against six men in DuPage County who are charged with having obtained more than $10,000 from fifty physicians on the representation that if the latter purchased stock in an insurance company they would be made medical examiners of the company.

Personal.—Dr. Joseph E. Huber, Peoria, who has been suffering from cholelithiasis, and under treatment at the Wesley Hospital, Chicago, has returned and will be operated on at Proctor Hospital, in a few days.——Dr. Frederick W. Werner, Joliet, is at Pass-a-Grille, Fla., recuperating after a serious surgical operation performed at Lakeside Hospital, Cleveland, recently.

Paralysis Clinic Opened.—Children who have suffered from infantile paralysis and are crippled were given free treatment at St. John's Hospital, February 20 to 22, at a clinic held under the auspices of the state board of health. This conference was open to physicians and parents of children in the counties of Sangamon, Schuyler, Mason, Cass, Menard, Christian, Morgan, Scott, Green, Montgomery, Macoupin and Logan. A public meeting was held in the Masonic Temple, Springfield, February 20, at which Governor Lowden presided, and an illustrated lecture was given by Dr. C. W. East. Provision has been made for the reception and free care of visiting patients at St. John's Hospital.

Chicago

Red Cross Unit Offered.—Announcement was made, February 24, that the Base Hospital Unit No. 11, of the American Red Cross, was complete. The unit is under the direction of Drs. Albert J. Ochsner and Nelson M. Percy. Drs. C. Hugh McKenna, Edward H. Ochsner, Stephen R. Pietrowicz, Arthur A. Small, David J. Davis and Oscar E. Nadeau are the assistant directors. Dr. Philip Schuyler Doan is adjutant, Dr. Austin A. Hayden, quartermaster, and Frank H. Duebler, registrar. At the meeting it was announced by Dr. John M. Dodson that Rush Medical College has decided to give credits to students for work done by them in training with hospital companies and that credits would also be given junior students of the medical school who take part in field hospital work in time of war.

INDIANA

Tuberculosis Cottage Ready.—The Burr Cottage, Kendallville, which was purchased from the proceeds of the sale of Red Cross seals in Noble County, is ready to receive patients.

Personal.—Dr. Alfred Henry, Indianapolis, has been reelected president of the Marion County Society for the Prevention of Tuberculosis.——Dr. Arthur E. Guedel, Indianapolis, dislocated his right knee recently while cranking his automobile.

IOWA

Hospital Opened.—The new St. Joseph's Hospital, New Hampton, was opened, February 12. The building is three stories in height, and of fireproof construction.

Personal.—Dr. George G. Baker, Spencer, was thrown from his buggy and painfully injured in a runaway accident, February 11.——Dr. Irvin N. Paul, Perry, sustained painful injuries by the overturning of his automobile near Minburn recently.——Dr. Lena A. Beach, formerly of the staff of the Cherokee State Hospital, has been appointed superintendent of the Women's Reformatory, Rockwell City.——Dr. Thomas F. Duhigg, Des Moines, formerly in command of a field hospital, Iowa National Guard, has been commissioned lieutenant in the Medical Reserve Corps of the United States Navy.

KANSAS

Offices for Physicians.—The Salina Clinic, an association of seven physicians, has purchased a corner lot on Iron Avenue and Eighth Street, Salina, on which it will erect a three-story building for the use of the clinic.

Physician Sentenced to Penitentiary.—Dr. Clement L. Katz, a physician of Wichita, was sentenced to two and one-half years in the penitentiary. He was found guilty on eight counts of a charge of selling habit-forming drugs in violation of the Harrison Narcotic Law.

Personal.—Dr. C. Curtis Allen, Cottonwood Falls, recently sailed for Europe to work in hospitals on the western front.——Dr. Charles F. Menninger, Topeka, has been appointed a member of the State Board of Medical Registration and Examination, to fill the vacancy caused by the death of Dr. Lewis A. Ryder.

Society Activities.—At the meeting, March 5, of the Shawnee County Medical Society, at Topeka, Dr. Philip H. Kreuscher, Chicago, will read a paper on "Metastatic Joint Infection," with lantern slide demonstration.——At the February meeting Dr. William W. Duke, Kansas City, Mo., read a paper on "Dental Sepsis and Its Relation to Systemic Disease."

KENTUCKY

Personal.—Dr. Henry Enos Tuley, Louisville, who has been ill and under treatment in Chicago, is making satisfactory progress toward recovery at Pass-a-Grille, Fla.——Dr. Charles E. Gaupin has been appointed head of the outpatient department of the Louisville City Hospital.——Dr. Charles A. Vance has been selected as a member of the board of health of Lexington, succeeding Dr. Walter O. Bullock (resigned).——Dr. Philip E. Blackerby, Erlanger, has been appointed registrar of the Kentucky State Board of Health. Dr. John G. South, Frankfort, has been reelected president of the board.

MAINE

Personal.—Major John G. Town, Waterville, Maine, M. C., has been designated chief surgeon on the staff of the commander in chief, succeeding Major Bial F. Bradbury, National Soldiers Home (resigned).——Dr. LeRoi S. Syphers, South Portland, has accepted the position of physician to Chebeague Island, succeeding Dr. Leon L. Hale, who has resided there for thirty years. Dr. Syphers will practice also on Cliff and Littlejohn islands.

MARYLAND

Personal.—Dr. Hugh Hampton Young, director of the James Buchanan Brady Institute of the Johns Hopkins Hospital, has left for a six weeks' trip to California.——Dr. John C. Hemmeter, director of the laboratory of physiology of the University of Maryland, delivered the annual address before the Tristate Medical Association, which opened at Durham, N. C., February 22.——Dr. Clarence J. Erkenbrack, Baltimore, sustained a fracture of the clavicle and a dislocation of the shoulder in a collision between the automobile in which he was riding and a street car, February 15.——Dr. Howard A. Kelly, Baltimore, who has been ill with pneumonia in Jacksonville, Fla., is reported to be convalescent.

Joint Meeting of Medical Societies.—A joint meeting of the Baltimore County Medical Association with the Baltimore City and the Howard County medical societies was held, February 21, when the topic under discussion was the mental defective. The associations passed a resolution strongly indorsing the governor's purpose to appoint a commission to study the problem of the state's mental defectives. To further the work of this commission, which is expected to be named within a week or two, the association will hold meetings, March 13, at the Medical Library. These will include a special meeting in the afternoon for schoolteachers and at night for the medical profession and general public. Mr. Joseph P. Byers, executive secretary of the National Committee for Provision for the Feeble-Minded, made the principal address of the afternoon.

MASSACHUSETTS

Field Ambulance for France.—The Harvard class of 1901 has presented an ambulance for the use of the American Ambulance service in France and will in addition provide for its maintenance for a year.

New Infirmary for Smith College.—Smith College, Northampton, will erect a new infirmary this summer to cost $75,000. The building is to be the gift of the alumni and will accommodate fifty patients. Provisions will be made for the isolation of students suffering from communicable diseases.

Harvard Medical Lectures.—The free public lectures given under the auspices of the faculty of medicine of Harvard University, at the Medical School, Longwood Avenue, Boston, at 4 o'clock on Sunday afternoons during March will be as follows:

March 4: "Diseases of the Teeth and the Use of the X-Ray in Their Diagnosis and Treatment," Dr. L. M. S. Miner.
March 11: "Social Service in Medicine," Miss Ida M. Cannon.
March 18: "Tuberculosis; Its Cause and Prevention," Dr. Cleaveland Floyd.
March 25: "Methods of Medical Progress," Dr. W. B. Cannon.

MICHIGAN

Medical Library for Detroit.—Plans for a municipal medical library were launched, February 14, at a dinner given by Dr. Arthur D. Holmes to the board of trustees of the library committee of the Wayne County Medical Society. It is proposed to create a memorial fund, the income from which can be used for the maintenance of the library.

College Merger Seems Assured.—A report states that on February 23 the regents of the University of Michigan adopted a resolution confirming the union with the University of the Detroit College of Medicine and Surgery. The terms of the merger are that the latter shall turn over its charter, real estate, equipment and hospital privileges to the university and that a fund of a million dollars will be raised for the development by the university of a graduate school of medicine in Detroit.

Personal.—Dr. Walter C. Walker, Highland Park, was thrown from his automobile and seriously injured in a collision with a trolley car, February 2.——Dr. Guy L. Kiefer, Detroit, has been appointed a member of the state board of health, to succeed Dr. John H. Kellogg, Battle Creek, and Dr. William F. English, Saginaw, to succeed Dr. Henry S. Bartholomew, Lansing.——Dr. George L. LeFevre has been elected vice president of the Union National Bank, Muskegon.——Dr. Benjamin F. Black has been elected president of the Holton State Bank.——At a meeting of the stockholders of the Ovid State Savings Bank, Dr. James McGillicuddy was elected vice president.

MINNESOTA

Paralysis and Smallpox.—The first case of infantile paralysis for the season was reported to the health department of St. Paul, February 23.

Sanatoriums Opened.—The tuberculosis sanatorium for the counties of Renville, Chippewa, Lac qui Parle and Yellow Medicine, located southeast of Granite, was opened, March 1.——Buena Vista Sanatorium, the new sanatorium for Wabasha County, erected at a cost of $45,000, was opened February 1.

Personal.—Dr. Christian S. Reimestadt resigned as health officer of Brainerd, February 13, and was immediately reappointed health officer and the appointment confirmed.——Dr. Julius P. Sedgwick, Minneapolis, has returned after a trip to the West Indies and the Canal Zone.——Dr. Justus O'Hage, Jr., St. Paul, has returned after service with the German Red Cross, on the eastern war front.——Dr. Harry B. Ewens, Virginia, has left for Toronto, for duty with the Canadian Army Medical Corps.

MONTANA

New Hospitals.—The Attix Clinic Hospital, Lewistown, built at a cost of $75,000, will be opened, April 1.——The new building of the Deaconess Hospital, recently erected at Great Falls, at a cost of $125,000, is a four-story, fireproof building, 139 by 39 feet, and contains eighty private rooms.

NEBRASKA

Health Conference.—The annual conference of local and state health officers was held in the Garden Room of the Lincoln Hotel, February 21 and 22. The governor delivered the address of welcome, and response was made by Dr. Robert McConaughy, York.

To Change Laboratory Control.—A bill has been introduced in the state legislature removing the present state bacteriologic laboratory from the control of the state board of health, and placing it under the charge of the University College of Medicine, Omaha. The bill also fixes the maximum salary of the state bacteriologist at $2,400 a year.

Personal.—Dr. William T. Eikner, Sidney, has been appointed county physician of Cheyenne County.——Dr. Joseph V. Hinchman, Blair, has been appointed physician to the Grand Island Soldier's Home, succeeding Dr. William R. Waggener, Humboldt (resigned).——Dr. M. Alace M. Kani, Omaha, suffered a fracture of the skull as a result of a collision between automobiles, February 3, and is in a serious condition.

NEVADA

Payment to Medical Board Disapproved.—The ways and means committee of the state legislature, February 13, made an unfavorable report on assembly bill No. 64, which provides for the payment of $20 a day to each member of the State Board of Medical Examiners while the board is in session.

NEW YORK

Transfer of Quarantine Station.—A concurrent resolution was adopted by the legislature, February 15, recommending the transfer from the state to the federal government of the New York Quarantine Station and calling on members of Congress to pass a measure appropriating $1,395,275 by July 1 to reimburse the state to take over the plant now utilized by the health officer of the port.

Public Health Association Officers Resign.—At a meeting of the executive committee of the Rochester Public Health Association, February 10, the resignations of Medical Director Dr. Edward G. Whipple and of the secretary, Mr. Garret Smith, were placed in the hands of Dr. Henry T. Williams, president of the board. The reason for this action is said to be "in view of the long continued lack of harmony in the present board of directors."

New York City

Personal.—Dr. Emil Mayer has been appointed consulting laryngologist to Mount Sinai Hospital.——Dr. Thomas H. Curtin, Bronx, was knocked down by an automobile at One Hundred and Forty-Fifth Street and Broadway, sustaining a fracture of several ribs.——Dr. Mortimer W. Raynor has been appointed chief psychiatrist of the penal institutions of New York City.

Must Report Occupational Diseases.—The department of health calls the attention of physicians to the fact that in a number of instances they have failed to report cases of occupational disease caused by various chemicals to the department of health, as required by the sanitary code. Physicians and the superintendents and managers of institutions and hospitals are urged to cooperate with the department of health in making prompt report of such cases. Special postal cards for the reporting of occupational diseases are furnished by the Division of Industrial Hygiene of the Bureau of Preventable Diseases on request.

Labor Unions Will Cooperate in Health Work.—A special meeting was held in this city, February 18, for the purpose of discussing questions affecting the health of working people, at which delegates, elected by more than fifty unions affiliated with the Central Federated Union, organized themselves into a permanent labor sanitation committee. Plans are being formulated for the cooperation of this committee with the Health Department's Division of Industrial Hygiene. It is believed that the two forces working together may by educational and other efforts secure the adoption by employers and by employees of industrial methods that may have far reaching effects in diminishing the amount of sickness prevalent in industry.

Free Lectures on Disease Prevention.—During March, the course of free lectures given by the public health education committee of the Medical Society of the County of New York at the New York Academy of Medicine will be as follows:

SOME OF THE ESSENTIALS FOR THE CONTROL OF VENEREAL DISEASES

Tuesday, March 6, 8:15 p. m.
"The Responsibility of Society," Edward L. Keyes, Jr., M.D.,
"The Importance of Gonorrhea," Caroline Finley, M.D.
"Incidence of Syphilis on the Community," Victor Cox Pederson, M.D.

IMPORTANT FACTORS IN THE HEALTH OF WOMEN

Thursday, March 15, 3:30 p. m.
"Habit Posture in Relation to Pelvic Conditions," Eliza M. Mosher, M.D.
"Physical Conditions as Related to Life Insurance," Charles G. Merchant, M.D., Medical Director, Mutual Life Insurance Co.
"The Relation of the Internal Secretions to Gynecology," Lillian P. Farrar, M.D.

MODERN LIFE AS GOVERNED BY NERVES

Wednesday, March 21, 8:15 p. m.
Title to be announced, Frederick Tilney, M.D.
"Fad of Psychanalysis," Beatrice Hinkle, M.D.
"What Every Nervous Woman Should Know," Edward Livingston Hunt, M.D.

RECREATION AS AN AID TO HEALTH

Thursday, March 29, 3:30 p. m.
"Pageantry and Plays in Community Life," Mary Porter Beegle.
"Gymnastics and Dancing Indoors and Out," William Gilbert Anderson, Dr.P.H., M.D., Professor and Director, Yale University Gymnasium.
"Psychical Values of Recreation," Caroline Rickards, M.D.

PENNSYLVANIA

Personal.—Dr. John J. Sullivan, Scranton, suffered severe cuts of the leg in an automobile accident, February 18.——Dr. Edward Ryan, Wilkes-Barre, has returned after two years spent in medical relief work in Serbia.——Dr. William S. Long, Reading, has abandoned his intention of joining the American Physicians' Relief Expedition and serving in the German field hospitals.

To Equip a Base Hospital.—The Pennsylvania Division for National Preparedness on February 23 turned over to the American Red Cross $25,000 for the equipment of a base hospital to be known as Pennsylvania Base Hospital No. 10, Pennsylvania Women's Division for National Preparedness. This money, which was pledged last summer, was given as follows: $10,000 by Mr. E. T. Stotesbury, $10,000 by Cyrus H. K. Curtis and $5,000 by Mrs. George W. Childs Drexel.

Application of Battlefield Lessons.—Advance of surgical methods developed in the European battlefields and their application to the workers in industrial plants were outlined at the Fourth Convention of Industrial Physicians, held at Harrisburg, February 16, at which Dr. William O'Neal Sherman, chief surgeon of the Carnegie Steel Company, discussed "The Dawn of a New Surgical Era"; Major Robert U. Patterson, M. C., U. S. Army, and Dr. Joseph C. Bloodgood, Baltimore, spoke on "The National Standards for First Aid"; Dr. William Estes, South Bethlehem, and Dr. Charles A. E. Codman, Philadelphia, took up "The Relation of the Physician to the Compensation Law and Its Proposed Amendments"; Drs. Frederick L. Hoffman, Newark, N. J., and Alfred Stengel, Philadelphia, considered "Compensation for Industrial Diseases," and Drs. Edward Martin, Philadelphia, and John B. Lowman, Johnstown, discussed "The Treatment of Fractures of the Long Bones from the View Point of Function."

Philadelphia

Lecture Course for Women.—The lecture course for women offered by the Women's Medical College of Pennsylvania, Philadelphia, on "The Health Problems of Every-Day Life," will be as follows during March:

March 7: "Prenatal Care and the Newborn Baby," Dr. Alice Weld Tallant.
March 14: "The Care and Feeding of Children," Dr. Theodore Le Boutillier.
March 21: "The Care of the Eyes," Dr. Mary Buchanan.
March 28: "The Importance of the Common Cold," Dr. Margaret F. Butler.

Personal.—Dr. William G. MacCallum, professor of pathology in the College of Physicians and Surgeons, New York, delivered the seventeenth Rush Society Lecture at the College of Physicians, March 1, on "Prevalent Disease in the East Indies."——Dr. L. Webster Fox has been reelected president of the Pennsylvania Home Teaching Society and Free Circulating Library for the Blind.——Dr. Charles S. Potts has been elected neurologist to the German Hospital.——Dr. Horace Phillips has succeeded Dr. Albert C. Buckley, resigned, as visiting physician in the psychopathic ward of the Philadelphia General Hospital.——Dr. Henry B. Ingle has been elected a member of the board of trustees of the Charity Hospital.——Dr. Eugene Swayne has organized Field Hospital Company No. 3, N. G. Pa.——Dr. Francis C. Abbott has left Philadelphia for another term of service on the French war front.

UTAH

Personal.—Dr. George E. Hyde, Salt Lake City, has been reappointed superintendent of the State Mental Hospital, Provo.——Dr. John J. Galligan has succeeded Dr. Thomas J. Howells (resigned) as assistant health commissioner of Salt Lake City.

New Officers.—Utah County Medical Society: president, Dr. Ephraim G. Hughes, Provo; vice president, Dr. Philemon M. Kelly, American Fork, and secretary-treasurer, Dr. Walter T. Hasler, Provo.——Cache County Medical Society: president, Dr. Thomas B. Budge, Logan; vice president, Dr. Curtis Bland, Preston, and secretary-treasurer, Dr. Frank O. Reynolds, Logan.

Military Program for Medical Society.—At the February meeting of the Salt Lake County Medical Society, Dr. John F. Sharp, Salt Lake City, delivered an address on "The Work of the Medical Department in the Recent Concentration"; Dr. George F. Roberts, Salt Lake City, discussed "Field Hospitals and Ambulance Companies"; Dr. Willard Christopherson, Salt Lake City, spoke on "The Regimental Surgeon," and Dr. Andrew A. Anderson, Brigham, described the work of sanitary inspection.

Bill Regarding Health Department.—A bill was introduced by Representative Greenwood, February 7, creating a health department of the state, combining under one head the work of several individual departments now operated as separate divisions. The new department, in addition to sanitary activities, will embrace the work of the state dairy and food department, the state superintendent of weights and measures, state hotel inspector and the sanitary inspector of barber shops. The board is to be composed of six practicing physicians and one sanitary engineer, and will select from its membership a state health commissioner, who will hold office for four years.

WASHINGTON

Sanatorium Wing Assured.—At a meeting of the Spokane County Antituberculosis Society it was announced that the county commissioners were now ready to help the league erect the children's wing at the Edgecliff Sanatorium. The wing will cost about $10,000, and work will begin in the early spring.

Medical Board Election.—At the annual meeting of the Washington State Board of Medical Examination the following officers were reelected: Dr. Royal A. Gove, Tacoma, president; Dr. Daniel M. Stone, Seattle, vice president; Dr. Conrad N. Suttner, Walla Walla, secretary, and Herbert F. Morse, D.O., Wenatchee, treasurer.

Personal.—Dr. V. Sheldon Smith, Seattle, has sailed for North Borneo, on a mission for the British government.——Dr. J. S. P. Rich, Roy, has been appointed superintendent of the Pearce County Tuberculosis Sanatorium, succeeding Dr. Raymond Cary.——Dr. Edward J. Stubbs, Seattle, who has been on duty on the western war front for more than two years, has returned to the United States.——Dr. Elmer E. Heg, Tacoma, has been reelected president of the state board of health.

Physicians Win Suit.—The supreme court recently handed down a decision in the case of R. D. Smith versus J. P. Driscoll, Pasca, and Henry B. O'Brien, Pasca, affirming the judgment of the lower court in favor of the physicians. The complainant asked for damages of $5,000 on account of an alleged wrongful publication and disclosure of confidential information acquired by the physicians in their professional capacity, and made while testifying as witnesses in a case to recover fees for medical service rendered by them.

WEST VIRGINIA

Personal.—Dr. Edmond D. Wells has been appointed physician in charge of a hospital at Clifton Forge, Va.

Ohio County Medical Society Activities.—At the February meeting of the Ohio County Medical Society, at Wheeling, held in cooperation with the board of education, Dr. Erwin A. Peterson, director of medical inspection and physical education of Cleveland, spoke on "Physical Education."——At the meeting on February 9, the annual banquet was held, presided over by Gov. H. D. Hatfield. Dr. Charles H. Chetwood, New York, and Dr. John A. Bodine, New York, presented papers, illustrated by motion pictures.

CANADA

Hospital News.—The tuberculosis sanatorium at Kentville, N. S., is to be enlarged to provide additional accommodations for 100 returned soldiers.——An addition is to be made to the hospital at Ingersoll, Ont., to cost $10,000.——The Hotel Dieu Hospital, Windsor, Ont., is letting a contract for a new addition, to cost $40,000.——As more room is needed for returned convalescent soldiers in Montreal, one of the newest and biggest public schools in that city is being converted into the uses of a general hospital. Negotiations are proceeding for the transfer to the Canadian Hospitals Commission.

Personal.—Dr. Albert J. Fraleigh, Toronto, is spending the winter in California.——Col. Frederick W. Marlow, Toronto, who recently resigned from the position of A. D. M. S., Military District No. 2, will leave shortly for England.——Col. Herbert A. Bruce, Toronto, has gone to Washington, D. C., by permission of the Canadian Minister of Militia, at

the request of Secretary of War Baker, to address a gathering of U. S. Army medical men as to the methods followed in Britain, France and Canada in dealing with sick and wounded soldiers.——Major Kenneth Mundell, Kingston, Ont., is to command the new army medical corps training depot recently established there to replace the field ambulance depot which is going to another point.——Dr. Robert C. MacGregor, London, Ont., has been appointed prison physician at the Jackson Penitentiary, Michigan.——Dr. Herbert W. Wall, Donalda, Alta., is spending the winter with his family in California.

University News.—Hon. Dr. Robert S. Thornton, Deloraine, minister of education of Manitoba, has introduced a bill into the legislature of that province by which the constitution of the University of Manitoba is to be remodeled. The sustaining income of that university is now derived from the province of Manitoba, outside the fees paid by students. By this legislation the university will come under the control of a board of governors, nine in number, appointed by the government, and serving for three years. The purpose of the legislation will bring the university under similar control to that of the University of Toronto.——It has been announced at Queen's University, Kingston, Ont., that more than 1,000 graduates and undergraduates of that institution are serving overseas.——The University of Toronto Base Hospital at Saloniki is to return to England. Since Col. James A. Roberts, Toronto, the officer in command, returned to England and was appointed to command the hospital at Taplow, the command of the Toronto unit has been under Col. William B. Hendry. The latter appointment will probably be made permanent.

GENERAL

Red Cross Base Hospital Offered.—The Eli Lilly Company, Indianapolis, has offered the local chapter of the American Red Cross $25,000, in the event of this country being drawn into war, to establish a base hospital of 500 beds. The offer is made as a memorial to Col. Eli Lilly of Indianapolis. Dr. Carleton B. McCulloch is to be director of the hospital.

Bequests and Donations.—The following bequests and donations have recently been announced:

Abington (Pa.) Hospital, a gift of $5,000 from Mr. and Mrs. Caleb S. Fox, as a memorial to their deceased son.

Dr. Frances R. Sprague, Norristown, Pa., household goods, jewelry, wearing apparel and a bequest of $20,000 by the Alumni Association of the Women's Medical College of Pennsylvania, Philadelphia, and $1,000, by the will of Dr. Bertha Lewis, Bryn Mawr, Pa.

Dr. Carl Brown, Bremen, Ohio, the residue of the estate of James E. Lane, after the payment of $2,000 to his son. The estate is valued at $23,000.

Candidates for Army Medical Corps.—The following applicants who successfully passed the examination, January 2-6, were appointed on the Medical Corps of the Army and have been ordered to the Army Medical School for the term beginning March 1: Drs. Clarke Blance, Norridgewock, Me.; Leon Alexander Fox, Birmingham, Ala.; Charles Elias Hyde, Southport, Conn.; David Dave Paulus, Oklahoma City; Rowland Daniel Wolfe, Fort Monroe, Va., and Max Riebenack Stockton, Swarthmore, Pa.

Safety Association Organized.—The Joseph A. Holmes Safety Association, made up of twenty-three societies, has been organized in Washington. Its objects are the betterment of mining conditions and of relations between operators and miners. The association will award annually one or more medals with honoraria, to be known as the Holmes Award, for the encouragement of more efficient safety devices, appliances or methods in mining, for personal heroism or for distinguished service or saving of life in any branch of the mining industry.

Interstate Quarantine Regulations.—Amendments were made, Feb. 12, 1917, to the interstate quarantine regulations promulgated by the treasury department, Jan. 15, 1916, relating to the following subjects: water for drinking or culinary purposes provided on cars and vessels by interstate carriers; water for drinking purposes provided at stations by interstate carriers; interstate transportation of persons having contagious or infectious diseases; sanitation of camps occupied by migratory workers, and prohibiting the interstate transportation of oysters and clams grown or handled under insanitary conditions. The text of these amendments may be found in *Public Health Reports* for February 23.

Army Medical Corps Examinations.—The surgeon-general announces that preliminary examinations for appointment of first lieutenants in the Army Medical Corps will be held at convenient points the first Monday in each month. Full information concerning these examinations can be procured on application to the "Surgeon-General, U. S. Army, Washington, D. C."——Those who qualify at their preliminary examination and complete their hospital internship by July 1 will be ordered to the Army Medical School for the special session of the school commencing July 9. The regular session of the school will open on October 1. In order to perfect all arrangements for the examination, applications should be completed at the earliest practicable date. There are at present 230 vacancies in the Army Medical Corps. After July 1, there will be 222 additional vacancies.

Standardization of Supplies.—Previous to the opening of the sessions of the National Defense Committee, in Washington, February 12, the personnel of organization and program for the immediate future of the newly formed committee on the standardization of medical and surgical supplies was announced. The committee is as follows: Drs. George W. Crile, Cleveland; Harvey Cushing, Boston; Lieut.-Col. Carl R. Darnall, M. C., U. S. Army; Charles L. Gibson, New York; Richard H. Harte, Philadelphia; Col. Jefferson R. Kean, M. C., U. S. Army; Surg. Joseph A. Murphy, U. S. Navy; Dr. Henry S. Plummer, Rochester, Minn.; Surg. Theodore W. Richards, U. S. Navy; Asst. Surg.-Gen. William Colby Rucker, U. S. P. H. S., and Frank F. Simpson, Pittsburgh. The objects of the proposed standardization are: to make it possible to obtain surgical supplies in large volume on short notice; to have definite specifications so that manufacturers of similar articles may divert their activities with a minimum of delay or inconvenience to the production of supplies required by the army and navy; to reduce the cost by enabling manufacturers to produce the various articles in quantity, and to enable civilian practitioners to become familar with the instruments and appliances which they will be expected to use if they are called to the colors.

Lectures on Military Medicine and Camp Sanitation.—The following officers of the Medical Corps of the army have been detailed to deliver a course of lectures on military medicine and camp sanitation at the institutions specified after their names. In addition to this each of the officers named will be expected to interest the students of the colleges and interns of the hospitals in the Medical Corps of the army as a career, to interest practitioners in the Medical Officers' Reserve Corps, to examine applicants for the Medical Officers' Reserve Corps and to organize the Medical Officers' Reserve Corps in sections and to instruct the officers of these sections in the duties of medical officers in peace and war:

Lieut.-Col. Weston P. Chamberlain: Harvard University, Tufts College Medical School and the Boston University, Boston.

Major James I. Mabee: Syracuse (N. Y.) University.

Capt. Robert C. McDonald: University of Texas, Galveston.

Major George F. Juenemann: Medical College of South Carolina, Charleston; University of Georgia, Augusta, and Emory University, Atlanta, Ga.

Lieut.-Col. Frederick M. Hartsock: New York Homeopathic Medical College, and Flower Hospital, Fordham University, and New York City and Long Island College Hospital, Brooklyn.

Lieut.-Col. Henry Page: University of Pennsylvania, and Temple University, Philadelphia.

Capt. Taylor E. Darby: University of Maryland and Johns Hopkins University, Baltimore.

Major Thomas L. Rhoads: University of Arkansas, Little Rock.

Major James Bourke: Marquette University, Milwaukee, Wis.; Detroit (Mich.) Medical College and University of Vermont, Burlington.

Major William N. Bispham: University of Illinois; Loyola University, Rush Medical College, and Hahnemann Medical College, Chicago.

Major Guy V. Rukke: University of Minnesota, Minneapolis, and University of Michigan, Ann Arbor.

Capt. Wibb E. Cooper: Vanderbilt University, Nashville, Tenn., and University of Tennessee, Memphis.

Major Henry F. Pipes: Washington University Medical School, St. Louis University School of Medicine, St. Louis.

Capt. Norman L. McDiarmid: University of Louisville, Ky., and University of Cincinnati, Ohio.

Capt. Thomas C. Austin: University of Alabama, Mobile, and Tulane University, New Orleans, La.

Major Harry L. Gilchrist: University of Pittsburgh.

Capt. John A. Burket: University of Colorado, Boulder.

Major Walter D. Webb (retired): Georgetown University, Washington, D. C., and University of Virginia, Charlottesville.

Col. John M. Banister (retired): John A. Creighton Medical College and University of Nebraska, Omaha.

Col. Louis A. LaGarde (retired): Medical College of Virginia, Richmond.

FOREIGN

Sauerkraut Made from Turnips.—The *Medizinische Klinik* states that white turnips are proving a very acceptable substitute for cabbage in the making of sauerkraut.

Japanese Medical College and Hospital Burns.—February 20, the Osaka Medical College Building and Hospital, the

largest in Central Japan, was destroyed by fire. There were 470 patients in the hospital, all of whom are believed to have been removed in safety. The loss exceeds $1,500,000.

Death in the Profession Abroad.—A. Pappenheim, privatdocent at the University of Berlin, noted for his work on the morphology of the blood and the blood diseases, editor of the *Folia haematologica,* recently succumbed to typhus acquired in his professional work. His manual on the chemistry of dyestuffs is an authority.

Institute for Experimental Psychology at Constantinople.—This new institution, founded by Professor Anschütz of Kiel, is now organized, and work has been begun with lectures and demonstrations by himself and his two Turkish assistants. It is a regular department in the University of Constantinople, including experimental psychology and pedagogics.

Leper Asylum on the Island of Sardinia.—A pavillion of the public hospital at Cagliari has been set apart for lepers in the contagious stage, and the provincial authorities have made notification compulsory of leprosy at any and all stages. They have also provided for removal of the children from a family where there is a leper, and for periodical surveillance of conditions in the homes of lepers, sterilization of the rooms, etc.

Births in Prussia in 1914.—The figures for 1914 show 599,728 boys and 566,852 girls born in Prussia. The total is 6,836 less than in 1913, and 19,820 less than in 1912. There were 35,948 stillbirths registered, twenty-one less than in the previous year. The number of illegitimate children totaled 92.2 per thousand born in wedlock. The mortality was 16.4 per cent. of the children born living, against 15 per cent. in 1913.

Medical Care for Soldiers' Families at Berlin.—The city of Berlin last year appropriated 500,000 marks to distribute among the physicians tending the families of soldiers. This was based on the assumption of a 5 mark fee for attendance during a sickness, including four or five consultations. But time has shown that this by no means covers the work, as the number of soldiers' families has materially increased, and Austro-Hungarian soldiers' families have also been coming to Berlin. The organized profession has therefore given notice to the city authorities that the arrangement terminates March 15. They ask for an appropriation of 1,250,000 marks as corresponding better to the customary minimal rates per patient. Negotiations are already under way between the organized profession and the authorities. The middle way has been proposed, namely, that the families unable to pay be given an allowance when sickness comes to them so they can remunerate their medical attendants themselves.

The Outlook for the Year's Food in Germany.—The *Deutsche medizinische Wochenschrift* of January 4 quotes the *Kreuzzeitung* as follows: "The estimation of the crop of bread grains proved to be a million tons too high, but still the crop is better than in 1915. In consequence of the more abundant harvest, barley and oats are to be used more freely for the table, not only in porridge and pudding form but in making bread. The failure of the potato harvest has led to the revoking of the order in regard to addition of potato to bread. Aside from seed potatoes, the total supply of potatoes for the table is only 279,000,000 hundredweights. The scarcity of potatoes is felt more in the cities on account of the lateness of the harvest and the lack of delivery wagons. The lack of potatoes for feed for cattle is bad for the stock of cattle. They are already feeling the effects of the more thorough milling of the grains, reducing the bran to use in feeding cattle, and also of the greater use of turnips and carrots for the table. Every animal ready to be slaughtered should therefore be slaughtered. At present there is no prospect of an increased fat ration. But the ration of meat may be increased by February. Conditions in regard to fruit, green vegetables, fish, eggs, and geese are said to be especially deplorable (*ganz besonders bedauerlich*) and they can scarcely be improved by the intervention of the food regulation board. Established maximal prices without public control have not worked particularly well; in some instances they have merely driven the articles from the market. The food regulation board will therefore not work along these lines, but will seek to improve the intolerable conditions (*unleidliche Zustände*) by delivery contracts, striving to bring the truck gardens, the fish markets and the geese farms into closer communication. It is to be assumed that the troops in the invaded countries, who last year had to be fed from Germany, will be able to raise their own food this year."

PARIS LETTER

Paris, Feb. 1, 1917.

The War

NEW MEDICAL MILITARY RANK

A presidential decree has established a new medical military rank, that of subadjutant, a grade lower than sublieutenant. Medical students presenting written evidence showing that they have attended at least eight quarters of medical study with a year of service at some post at the front in the military health service, as well as six months' service as auxiliary physician, are eligible for appointment to this rank. A successful examination before a special board must be passed. Students presenting six or seven certificates may be nominated to this service after passing a special examination, provided they have served an internship of at least one year in a civil hospital prior to their entrance into the army service. Students possessing only four or five certificates must have served at least eighteen months at a military health service post, and one year as auxiliary physician. They, too, must pass the special examination. Members of the army medical service may be appointed as auxiliary physicians under the following regulations: (*a*) Titular students with but four certificates validated at the time of their enlistment, provided they have attended a period of instruction of three months, served six months in the military health service and passed a practical examination before a special body of examiners; however, students having completed one year in the health service at the promulgation of the present decree can be appointed as auxiliary physicians. (*b*) Students holding but two or three certificates validated at their enlistment, and who comply with the following requirements: (1) three months of instruction supported by practical work and technical conferences; (2) six months' service at a post of the health service at the front; (3) examination before the special board of examiners and (4) six months' sojourn with the army.

ABUSE OF AMPUTATIONS OF THE THIGH IN ARTICULAR WOUNDS OF THE KNEE

Dr. Marquis reported on this subject to the Réunion médico-chirurgicale de la V-e Armée. A large percentage of the amputations made during this war were necessitated by articular wounds. The most frequent amputation was that through the thigh incident to a wound of the knee; in fact, one sixth of all amputations were of this type. For articular wounds with extensive bone lesions, Dr. Marquis suggests the consideration of two methods, resection and arthrotomy. He has found that extensive arthrotomy with suture of the synovial membrane, done shortly after the injury is inflicted, yields marvelous results. The operation must be performed by a competent surgeon under rigid aseptic conditions and with every facility at hand. Primary resection frequently saves a limb. Secondary amputation through the thigh has been resorted to, especially in cases of purulent arthritis, either after failure of arthrotomy or in preference to it. Bilateral arthrotomy, followed by the Carrel method of treatment, has given Marquis five cures in cases of purulent arthritis of the knee. If this treatment is ineffective, then a secondary resection must be done. He reports on twelve cases, three of which, however, are too recent to be included in his analysis. Among the remaining nine, one death occurred six days after operation, the result of a hemorrhage in Scarpa's triangle. One secondary amputation was done in seven cases, and cure was effected with good functional results. In the resection cases the stability of the bone union is increased by wire suture uniting the ends of the femur and tibia.

Death Resulting from Chloroform Anesthesia Administered by a Pharmacist in an Emergency

In June, 1916, Dr. Robert Brunet and Pharmacist Guy were fined 100 francs ($20) for having indirectly caused the death of a boy. The defendants appealed to a higher court, and were acquitted for the following reasons: It was not established that the physician had committed any act in the exercise of his art which would justify condemnation, and he proved that the operation performed on the boy was necessary and urgent; that he made an examination of the patient, and found no contraindication to the use of an anesthetic for the performance of the operation. He himself administered the chloroform in the usual way and with caution, although he entrusted the anesthesia to the pharmacist for a few moments. It could not be said that he was assisted by an incompetent person or that he turned over to the pharmacist the care of the patient. The boy died, it is true, but the court

was unable to establish a reason for his death which had any bearing on any act of the attending physician. The court did not think it would be right to attribute the death to a professional error on the part of the physician. As for the pharmacist, who held the chloroform mask over the patient's face for less than two minutes, as directed by the physician, he was released. Both physician and pharmacist were relieved of the penalty inflicted by the lower court.

The Fight Against Syphilis

At the instance of M. Henri Rousselle, the city of Paris has made an appropriation of 60,000 francs ($12,000) for 1917 to the Prophylactic Institute. (THE JOURNAL, April 15, 1916, p. 1213). The department of the Seine has granted an appropriation of 40,000 francs ($8,000) to be used for the same purpose.

LONDON LETTER

LONDON, Feb. 5, 1917.

The Food Problem

The destruction of merchant vessels by submarines has exercised the government as to the problem of food supply. Though food is nearly double the price it was before the war, there is as yet no shortage and, thanks to abundant employment and high wages, the people are able to buy all that they require. But the future is not without some anxiety. The government has appointed a committee of experts, among whom are leading physiologists, including F. G. Hopkins, D. Noel Paton, and W. H. Thompson, to investigate the question. They have issued an important report, which should be of value to any country engaged in war. The committee finds that the dietary requirements of a nation for the most part engaged in active work cannot be satisfactorily met on a less supply of food as purchased than 100 gm. of protein, 100 gm. of fat and 500 gm. of carbohydrate. The carbohydrates should equal about 3,400 heat units a day. Taking into consideration the requirements of women and children, it has been concluded that 100 men, women and children will equal 77 units, that is to say "men." During the period of 1909-1913 there were available per "man" in the United Kingdom: protein, 113 gm.; fat, 130 gm., and carbohydrates, 571. This, it will be seen, is considerably above the minimum requirement, and allows a margin of waste. There have been either wasted or consumed in excess of requirements: protein, from 11 to 14 per cent.; fats, from 25 to 30 per cent., and carbohydrates, from 10 to 14 per cent.

War involves a redistribution of food into two shares: (1) for military and naval establishments, and (2) for the civilian population. The committee has assumed the former to be 4 millions (2 millions on home service and 2 millions in the field), and the latter to be 31.8 million "men" (42.5 million men, women and children). The available food, then, on the basis of supply before the war is:

	Military (4 millions) Gm.	Civilians (31.8 million "men") Gm.
Protein	140	106
Fat	180	120
Carbohydrates	500	563

This shows that on the basis of supply before the war the food available for the civil population would be more than sufficient as regards the supply both of protein and of energy. The committee finds that with reference to the supplies of meat, wheat, fish and sugar for the total population up to the present time (July 29, 1916), these, taken together, show a small increase in food values during the year ending June, 1916, as compared with conditions existing before the war. They have no evidence that the supplies of other foods have, in the aggregate, been less than in the period prior to the war. But they utter the warning that the needs of the armies, the decreased yield of the harvest at home in 1916, and possible interference with the supplies from abroad may reduce the supply in the future below this level. Up to the present the supply of food has provided a general margin of about 5 per cent. above the minimum necessary for proper nutrition, and rather more as regards the supply of energy. A redistribution could, therefore, be borne without serious injury to the community, but only on the condition that steps are taken to insure the equitable distribution of the available food throughout the population. While the supply of food, up to the present, has been adequate for the population, the rise in prices has accentuated the inequalities of distribution, which reduce the daily ration of many below the level of efficiency. Any curtailment of supplies, even to a limited extent, would result in the poorer classes obtaining less than is needful for safety, should distribution remain unorganized.

The question of killing cattle when 17 months old in place of the present method of slaughtering when 2½ years old is discussed. This production of "baby beef" would produce a large amount of protein and liberate fodder stuffs (hay, grass, straw, roots and oilseed cakes), but not stuffs suitable for human food. A universal application of the scheme is not immediately practicable, however. It would require much organization, especially in the care, purchase and distribution of suitable calves, and in many districts would also involve considerable alterations in the system of farming. On the other hand, it is estimated that about one third of the oxen fattened in winter are overfed to the extent of 2 pounds of "starch equivalent" per head per day. This works out at a loss of 64,000 tons of starch equivalent, which if properly used might produce 8,000 tons more beef. Again, during the last month of the fattening of winter-fed cattle (lasting from four to five months), appearance rather than weight is improved. By cutting out the last month, an obvious economy might be effected. Economy in fodder can also be secured by varying the kind of animal to which it is fed. Thus while 2⁹⁄₁₀ pounds of starch equivalent in fodder will produce 1,000 heat units in the form of milk from a good cow, 9 pounds are required to produce the same amount in "steer" beef. The figures for pig meat are 3 pounds, and for veal 4⁷⁄₁₀ pounds. They justify the agricultural policy of most continental countries which rely on dairy products, pig meat and veal for a large proportion of their supply of animal food.

Another proposal to increase the food supply is that milk should be used for making cheese instead of butter. It is assumed that 2½ gallons of milk make 1 pound of butter, and that 1 gallon of milk makes 1 pound of cheese. The question of energy value is not considered, since both butter and cheese contain practically the same amount of the fat of the milk. But the net gain which might be realized by the general adoption of cheese making in place of butter making is 55,000 tons of protein, or per "man" 4.2 gm. per day. Other suggestions which, as stated in previous letters to THE JOURNAL, have been put into force by the government, are the milling of a greater proportion of flour from wheat and the reduction in the amount of barley allowed to be used for brewing.

The food controller has issued an appeal to the whole population, asking people voluntarily to restrict their consumption of the three staple foods per week thus: bread, 4 pounds; meat, 2½ pounds, and sugar, ¾ pounds. These quantities have been arrived at after full examination of the stocks available. Only by this means can an adequate margin to meet contingencies be provided for. It is hoped that, by loyal obedience, compulsory rationing, which would require an elaborate machinery and absorb labor, may be avoided. The consumption of these commodities varies according to age, sex, occupation and other conditions. The indicated allowance, therefore, provides for adjustment or apportionment between members of each household in relation to individual needs. It is recognized that some persons eat more bread and less meat than the quantities indicated, and that others eat more meat and less bread. In all these cases a resolute effort on the part of each consumer to reduce consumption by at least 1 pound of bread or ½ pounds of meat per week, or both, will automatically bring about a saving of over 1,000,000 tons per annum of these foods. As regards bread, especially, the variation in individual consumption is most marked. This is attributable to the fact that the lower the scale of income and of consequent living, the higher the bread consumption, for with many in such circumstances meat is only intermittently comprised in the scale of dietary, whereas bread constitutes the main staple. Although these quantities will form the basis of the dietary scale, they will naturally be supplemented by other food products. The nation is placed on its honor to observe these conditions.

The Great Explosion

The greatest explosion in a munition factory experienced in England took place in a crowded part of London and was attended by many injuries. The majority of the injured were treated at the London Hospital. The house governor, Mr. E. W. Morris, has given in the *Hospital* a graphic picture of how the hospital confronted this catastrophe. Work was proceeding quietly and as usual on that evening. Those who were indoors behind drawn blinds had no warning beforehand. Those, however, who happened to be crossing the grounds from one part of the hospital to another had some warning. The sky was lighted eastward by a red glow which

became brighter and brighter, until at last it was like a red twilight at sunset, and the whole of the details of the hospital building could be distinctly seen. A few seconds after the moment of greatest illumination, the explosion occurred. The explosion itself was not a single bang, but more like a short rattling clap of thunder when the storm is close overhead. Certain arrangements had been made in case of aerial attack in the immediate neighborhood. In this contingency the house governor goes to the main entrance, close to the telephone room, and directs proceedings in a general way. The engineers report to him and remain ready for what may happen. Porters who are sleeping in and who have weekly fire drill also report and await orders. Military orderlies, of whom there are about thirty in the hospital, also stand at attention. The orderlies are taught certain duties which they might have to carry out in case the hospital were struck by a bomb, such as the quickest way of emptying a ward of bedridden people.

When the explosion occurred the chief telephone operator was standing at the door of her room; she was certain that a bomb had dropped in the grounds close outside her window, which was broken. She went to her instrument at once and telephoned, as previously arranged, for the engineers; they appeared, however, before the necessary connections were made. An attempt was made to get through to the telephone exchange to obtain some idea of what had happened, but no reply could be elicited for about ten minutes. Meanwhile a somewhat alarming smell of fire was noticed; this, however, was soon traced to the fact that soot had been driven down many of the chimneys into the rooms. Porters were drawn up awaiting orders, as were the orderlies, and the house physicians and house surgeons went to their own wards to steady their patients, also according to plan. A call then came through from the police asking for medical assistance to be sent at once. They reported a fearful explosion at a large chemical works. It was easy enough to procure volunteers for such work, and in a few minutes five male and three female physicians and some dressers were ready to start with a large supply of tourniquets, morphin syringes, and instruments for rendering first aid. Soon the injured began to arrive in every conceivable form of conveyance, the greatest number in huge motor lorries.

Marriages

JOHN F. SPEARMAN, M.D., Sharon, Pa., to Fräulein May von Raczeck of Hannover, Germany, at Preiswitz, Silesia, Germany, October 16.

LIEUT. ROBERT B. HILL, M. R. C., U. S. Army, Fort Sam Houston, Texas, to Miss Lulu M. Dorsey of Clarksville, Md., January 11.

ORVILLE BRUCE MOON, M.D., Mills, N. M., to Miss Gwendolyn Hardy of Butte, Mont., at Las Vegas, N. M., February 11.

ELTON AUBREY RATCLIFFE, M.D., Petersburg, Va., to Miss Agnes M. Grigsby of Scribner, Va., at Elkton, Md., January 25.

DANIEL GISH STINE, M.D., Columbia, Mo., to Miss Ellen Wylder of Jacksonville, Ill., at Kansas City, December 23.

JOHN FRANCIS KENNY, M.D., Pawtucket, R. I., to Miss Anne Evangelist Lee of Woonsocket, R. I., February 5.

EDWARD D. FREEMAN, M.D., Osgood, Ind., to Mrs. Olive Bevan Townsend of Norwood, Ohio, February 8.

SIMON MAIMON SAMUELS, M.D., Seattle, to Miss Sophie Robbins, at Phoenix, Ariz., February 8.

HERMAN AUGUSTUS HELMING, M.D., Cusson, Minn.; to Miss Clara G. Jensen of Virginia, Minn., January 11.

THOMAS COOK STELWAGEN, JR., M.D., to Miss Elizabeth C. Coane, both of Philadelphia, February 14.

F. JANNEY SMITH, M.D., Detroit, to Miss Jeanie Wilmer Smart, at Lutherville, Md., February 14.

MORRIS T. HORWITZ, M.D., Bridgeport, Conn., to Miss Sabina M. Zinburg of Baltimore, February 21.

LEE WESTER STOREY, M.D., Cheyenne, Wyo., to Miss Mary Jane Hopkins of Denver, February 14.

SANFORD B. WHITING, M.D., to Mrs. Mary Merges, both of Portland, Ore., recently.

LEO JOHN DRETZKA, M.D., Detroit, to Miss Doris Moore, at Detroit, February 12.

Deaths

Lieut.-Col. Edwin Bentley, M. C., U. S. Army (retired), Little Rock, Ark.; New York University, New York, 1847; Bellevue Hospital Medical College, 1877; College of Physicians and Surgeon in the city of New York, 1877; aged 92; formerly a Fellow of the American Medical Association; a member and once president of the Arkansas Medical Society; a member of the Association of Military Surgeons of the United States; a member of the Mississippi Valley Medical Association; professor of the principles and practice of surgery in the Medical Department of the University of Arkansas; a pioneer surgeon of Arkansas; who entered the army at the outbreak of the Civil War as assistant surgeon of the Fourth Connecticut Infantry; was later made surgeon of United States Volunteers, and honorably mustered out in 1866 as lieutenant-colonel; then entered the medical corps of the army and after passing through the various grades was retired as major, July 3, 1888, and was given the grade of lieutenant-colonel, retired, April 3, 1904; died at his home, February 5, from the effects of a fall eight weeks before.

George Hudson Makuen, M.D., Philadelphia and Newfield, N. J.; Jefferson Medical College, Philadelphia, 1889; aged 61; a Fellow of the American Medical Association, and chairman of the Section on Laryngology, Otology and Rhinology in 1901-1902; president of the American Academy of Medicine in 1900, of the American Laryngological Association in 1915 and of the American Laryngological, Rhinological and Otological Society in 1912; widely known for his work on defects of speech; professor of defects of speech in the Philadelphia Polyclinic since 1896; laryngologist and otologist to Chester Hospital; laryngologist to St. Mary's and the Douglas Memorial hospitals, Philadelphia; at one time a member of the faculties of Jefferson Medical College, the Centenary Collegiate Institute and National School of Elocution and Oratory; died at his old home in Goshen, N. Y., February 21.

Whitman Vassel White, M.D., New York; Berkshire Medical College, Pittsfield, Mass., 1857; aged 82; surgeon in chief of the First Division of the Ninth Army Corps Field Hospital during the Civil War; for thirty-eight years operating and consulting surgeon to the Manhattan State Hospital, Wards Island; at one time superintendent of the State Insane Hospital, Binghamton, N. Y., and of the Government State Hospital for the Insane, Washington, D. C.; died at the home of his son in Richmond Hill, S. I., February 21, from cerebral hemorrhage.

Bertha Lewis, M.D., Bryn Mawr, Pa.; Women's Medical College of Pennsylvania, Philadelphia, 1893; aged 64; a Fellow of the American Medical Association; a member of the Philadelphia Pediatric Society; assistant orthopedic surgeon to the Philadelphia Polyclinic; orthopedist to the West Philadelphia Hospital for Women; a well known welfare worker and one of the organizers of the Southwark Neighborhood House; was instantly killed in a collision between automobiles at Bryn Mawr, February 11.

Lewis A. Ryder, M.D., Topeka, Kan.; Hahnemann Medical College, Chicago, 1883; aged 55; formerly surgeon of the Third Infantry, Kansas National Guard; once president of the state board of medical examination and registration, state reform school and Topeka city council; medical director of the Kansas Home Mutual Life Insurance Company; died in Stormont Hospital, Topeka, February 5, from gangrene, for which amputation of the foot was performed, January 25.

Albert George Blodgett, M.D., Ware, Mass.; Bellevue Hospital Medical College, 1868; aged 75; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; president of the Hampshire County (Mass.) Medical Society in 1904-1905; founder of the Brookfield Medical Club in 1882; for six years secretary of the board of health of Ware; died at his home, February 10, from arteriosclerosis.

Helen Reynolds Kellogg, M.D., Chicago; Northwestern University Women's Medical School, Chicago, 1886; aged 60; a pioneer worker in social welfare with especial reference to working girls; for many years one of the heads of the Klio Noonday Rest Association, and sponsor of many philanthropies; founder of a free dispensary for girls; died in the Cook County Hospital, February 21, from diabetes.

Robert Alexander Douglas Lithgow, M.D., Boston; University of Edinburgh, Scotland, 1871; University of St. Andrews, Dundee, 1890; aged 70; a member of the Massachusetts Medical Society; a writer of marked ability and a deep student

of history, literature and ethnology; died in the Massachusetts General Hospital, February 16, from the effects of injuries received in a fall in December last.

Stephen Clifton Glidden, M.D., Danville, Ill.; University of Michigan, Ann Arbor, 1894; aged 45; a Fellow of the American Medical Association, and formerly president of the Vermilion County Medical Society; formerly chief surgeon of the Illinois Traction System; who had suffered for a long time from the results of Roentgen-ray exposure; died at his home, February 20.

George Meyers, M.D., New York; College of Physicians and Surgeons in the City of New York, 1886; aged 55; a Fellow of the American Medical Association and New York Academy of Medicine; well known as an internist; visiting physician to the Hospital for Deformities and Joint Diseases, New York, and the German Hospital; died at his home, February 14.

George Woodhull Emory, M.D., Bryan, Texas; Tulane University, New Orleans, 1894; University and Bellevue Hospital Medical College, New York, 1899; aged 46; a Fellow of the American Medical Association; who was shot as he stepped from a train in San Antonio, February 12; died from his wounds at the Robert B. Green Memorial Hospital a few hours later.

Robert August Koempel, M.D., New York; New York University, New York, 1887; aged 60; also a graduate in pharmacy and a veterinary surgeon; died in the Botanical Gardens of the New York Zoological Park, February 14, from the effects of a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health.

Irenaeus Maybury Shepherd, M.D., Trenton, N. J.; University of Pennsylvania, Philadelphia, 1892; aged 49; a Fellow of the American Medical Association; a member of the visiting staff of Mercer and St. Francis' hospitals, Trenton; medical inspector of the Trenton Board of Health for several years; died at his home, February 13, from cerebral hemorrhage.

George Miller Shillito, M.D., Pittsburgh; Jefferson Medical College, 1868; aged 76; a Fellow of the American Medical Association; for many years a member of the staff of the Allegheny General and St. Francis' hospitals; physician to the Allegheny City Home, and a director of the Fourth Ward Allegheny public schools; died at his home, February 14.

John Sidney Gray, M.D., Winnipeg, Man.; McGill University, Montreal, 1876; aged 67; secretary of the College of Physicians and Surgeons of Manitoba and professor of gynecology in the Manitoba College of Medicine, Winnipeg; for thirty-five years a member of the staff of the Winnipeg General Hospital; died at his home, February 11.

William G. Jameson, M.D., Palestine, Texas; Missouri Medical College, St. Louis, 1878; aged 60; a Fellow of the American Medical Association; for twenty years chief surgeon of the International and Great Northern Railway; a member of the National Association of Railway Surgeons; died at his home, February 12, from heart disease.

Braxton D. Cox, M.D., Campton, Ky.; Kentucky School of Medicine, Louisville, 1889; aged 72; a Fellow of the American Medical Association and formerly president of the Breathitt County Medical Society and Kentucky Valley Medical Association; a veteran of the Civil War; died at his home, February 13, from disease of the liver.

Edward Woodbridge Avery, M.D., Brooklyn College of Physicians and Surgeons in the City of New York, 1862; aged 76; a veteran of the Civil War, in which he served both in the navy and army, and later in the German service during the Franco-Prussian War; died at his home in Brooklyn, February 13, from pneumonia.

George W. Mitchell, M.D., Denver; Jefferson Medical College, 1860; aged 83; surgeon of the One Hundred and Nineteenth Pennsylvania Infantry, U. S. V., during the Civil War; died at the home of his son in Denver, February 7, from senile debility, following a fracture of the hip which occurred in October last.

James Morris Jenkins, M.D., Auburn, N. Y.; Syracuse (N. Y.) University, 1875; aged 67; a member of the Medical Society of the State of New York, and once president of the Cayuga County Medical Society; physician to the Auburn City Hospital; died at his home, February 3, from heart disease.

Stephen Elmer Palmer, M.D., Elmira, N. Y.; University of Michigan, Ann Arbor, 1872; aged 69; for thirty years a member of the Medical Society of the County of Chemung, N. Y., and of the Elmira Academy of Medicine; also a graduate in pharmacy; died at the home of his son in Elmira, February 9.

Louis Eugene Hollister, M.D., Newark, N. J.; University of Michigan, Ann Arbor, 1873; aged 68; a Fellow of the American Medical Association; local surgeon of the Lehigh Valley Railroad; formerly a member of the board of health and board of education; died at his home, February 15.

Harry F. Williamson, M.D., Paducah, Ky.; University of Louisville, Ky., 1896; aged 55; formerly a Fellow of the American Medical Association and president of the school board of Paducah; for two years city physician; died at the home of his sister in Paducah, February 9.

Minor M. Jacobs, M.D., Hamilton, Ohio; Miami Medical College, Cincinnati, 1888; aged 50; for several years a member of the board of health of Hamilton, and district physician of Lindenwald; also a druggist; died in Mercy Hospital, Hamilton, February 11, from heart disease.

Zadok Thomas Blackwell, M.D., Joplin, Mo.; Kentucky School of Medicine, Louisville, 1888; aged 58; a member of the Missouri State Medical Association; for several terms justice of the peace and for five years postmaster of Preston, Kan.; died at his home, February 10.

Morris Weil Brinkman, M.D., New York; University of Pennsylvania, Philadelphia, 1884; aged 57; a Fellow of the American Medical Association; a specialist on electrotherapeutics and inventor of many appliances in that specialty; died at his home, February 15.

Oscar Samuel Owens, M.D., Richmond, Va.; University of Maryland, Baltimore, 1905; aged 37; a member of the Medical Society of Virginia; for many years local surgeon to the Southern Railroad; died at the Retreat for the Sick, Richmond, February 8.

William H. Barnard, M.D., Anguilla, Miss.; Hospital College of Medicine, Louisville, 1877; aged 67; formerly a member of the Mississippi State Medical Association; treasurer of Sharkey County; was found dead at his home, February 13, from heart disease.

W. S. Harwood, Monroe City, Mo. (license, Missouri, 1883); aged 76; for more than fifty years a practitioner of Monroe County; formerly a member of the Missouri State Medical Association; died at his home, February 12, from heart disease.

John Thomas Parker, M.D., Stockton, Md.; New York University, New York, 1861; aged 77; surgeon in the Confederate service during the Civil War; a member of the legislature from Worcester County in 1870 and 1871; died at his home, February 7.

James R. Dewey, M.D., Chicago; Chicago Homeopathic Medical College, 1888; aged 85; also a lawyer; for forty-one years a teacher of Greek, Latin, geometry and astronomy in the West Division High School, Chicago; died at his home, January 31.

John Lenman PoHock, M.D., New Auburn, Minn.; Memphis (Tenn.) Hospital Medical College, 1911; aged 47; while making a professional call south of Hanley Falls, February 10, was caught in a severe blizzard and was found frozen to death.

Clarence Abbott, M.D., Otwell, Ind.; Kentucky School of Medicine, Louisville, 1898; aged 45; a Fellow of the American Medical Association; formerly trustee of Jefferson Township, Pike County; died at his home, about February 13.

Thomas H. Hallett, M.D., Clyde, N. Y.; University of Buffalo, N. Y., 1890; aged 56; a Fellow of the American Medical Association; president of the village of Clyde in 1890; died at his home, February 11, from pernicious anemia.

William Otho Bennett, M.D., Pittsburg, Kan.; Medical College of Indiana, Indianapolis, 1892; aged 56; formerly a member of the Kansas Medical Society; died in Mount Carmel Hospital, Pittsburg, February 5, from nephritis.

James Cyrus Black, M.D., Harrisburg, N. C.; University of Maryland, Baltimore, 1886; aged 59; a Fellow of the American Medical Association; died at his old home in Pioneer Mills, N. C., February 4, from acute gastritis.

Thomas Tobin, M.D., Tyrone, Pa.; University of Buffalo, N. Y., 1882; aged 61; a member of the Medical Society of the State of Pennsylvania; while making a professional call, February 13, died from cerebral hemorrhage.

W. N. Davis, Meehan Junction, Miss. (license, Mississippi, 1898); aged 54; a Fellow of the American Medical Associa-

tion; physician to the Cotton States Lumber Company; died at his home, February 14, from pneumonia.

Edward Luther Parks, M.D., Boston; Jefferson Medical College, 1874; aged 67; a Fellow of the American Medical Association, and a specialist on diseases of the eye; died in the Boston City Hospital, February 8.

Robert Marshall White, M.D., Boston; Tufts College Medical School, Boston, 1910; aged 36; a member of the Massachusetts Medical Society; died at his home in Dorchester, Boston, February 13, from pneumonia.

Joseph G. West, M.D., Kemblesville, Pa.; University of Pennsylvania, Philadelphia, 1860; aged 82; a member of the state legislature from 1891 to 1893; school director for fifteen years; died at his home, February 10.

William M. Doores, M.D., Crab Orchard, Ky.; Missouri Medical College, St. Louis, 1851; aged 86; captain in the Confederate army during the Civil War; died in Crab Orchard, February 10, from senile debility.

James E. Robertson, M.D., Midvale, Utah; McGill University, Montreal, 1895; aged 44; a member of the Utah State Medical Association; died from heart disease while making a professional call, February 3.

John Edward Hoole, M.D., Somerville, Mass.; College of Physicians and Surgeons, Baltimore, 1903; aged 49; a Fellow of the American Medical Association; died at his home, February 15, from heart disease.

George Ernest Thomes, M.D., Port Chester, N. Y.; Medical School of Maine, Brunswick, 1886; aged 58; a Fellow of the American Medical Association; died at his home, February 12, from pleuropneumonia.

Udams E. Maulsby, M.D., Beaconsfield, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1887; formerly mayor of Sharpsburg, Iowa; died at his home, about January 18, from pneumonia.

Adelbert Schneider, M.D., Milwaukee, Wis.; University of Strassburg, Germany, 1885; aged 55; formerly a Fellow of the American Medical Association; died recently at his home in Berlin, Germany.

John C. McMillen, M.D., Falconer, N. Y.; Jefferson Medical College, 1879; aged 64; formerly a Fellow of the American Medical Association; died at his home, February 10, from pneumonia.

Charles Edward Barton, M.D., New York; New York University, New York, 1890; aged 59; a member of the Medical Society of the State of New York; died at his home, February 11.

Samuel Vail Wright, M.D., Greensburg, Ind.; Cincinnati College of Medicine and Surgery, 1871; aged 70; who fell a few days before, fracturing his hip; died at his home, February 14.

Carl J. Rollmann, Jr., M.D., Burr Oak, Mich.; Detroit College of Medicine and Surgery, 1906; aged 37; died at his home, January 8, from mitral stenosis.

Sheldon Pitcher, M.D., Detroit; Michigan College of Medicine and Surgery, Detroit, 1890; aged 54; died in Detroit, Nov. 19, 1916, from pleuropneumonia.

Lute Postle Lisle, M.D., Columbus, Ohio; Cincinnati College of Medicine and Surgery, 1878; aged 65; died at his home, February 6, from heart disease.

William Robert Hume, M.D., Oakland, Calif.; Oakland College of Medicine and Surgery, 1915; aged 39; died at his home, January 31, from pneumonia.

Annis Hyman Crawford, M.D., Williamsport, Pa.; Women's Medical College of Pennsylvania, Philadelphia, 1883; aged 60; died at her home, January 29.

Harvey Lindsey Harris, M.D., Bellflower, Ill.; Rush Medical College, 1875; aged 70; died at his home, February 2, from carcinoma of the stomach.

Oscar Joseph Karl Prinzler, Pittsburgh (license, Allegheny County, Pa., 1881); aged 81; a veteran of the Civil War; died at his home, January 16.

Aloysius Hoehn, M.D., Cincinnati; Medical College of Ohio, Cincinnati, 1876; aged 62; an invalid for several years; died at his home, February 3.

William Henry Allen, M.D., Pekin, Ill.; University of Buffalo, N. Y., 1870; aged 67; first health officer of Pekin; died at his home, January 31.

Almus Pratt Evans, M.D., Concord, N. H.; Hahnemann Medical College, 1887; aged 56; died at his home, January 26.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

DATING OF BIOLOGIC PRODUCTS

Report of the Council on Pharmacy and Chemistry

For the protection of the consumer, as well as the manufacturer, the Council on Pharmacy and Chemistry has adopted a rule requiring that serums, vaccines and similar products to be accepted for New and Nonofficial Remedies must bear on each package the date of its manufacture in addition to the date required by federal law. In explanation of this action the Council has authorized publication of the report which appears below. W. A. PUCKNER, Secretary.

The practice now followed by manufacturers of placing on the containers of biologic products the dates beyond which these agents are not to be regarded as dependable (though in accordance with the federal law governing interstate traffic) has not been uniformly satisfactory to either manufacturer or physician.

For diphtheria and tetanus antitoxins there are definite official potency standards readily determinable by dependable tests. Consequently the dates on packages of these antitoxins mean that the manufacturer vouches for their potency up to the time indicated, assuming that they have been kept under proper conditions. There are no methods, however, for determining the potency of the great majority of serums and vaccines, particularly the bacterial vaccines. Moreover, while we do not know the exact effect of age on these substances, there is sufficient reason for preferring a fresh product to one of uncertain age.

Probably the most important factor in the preservation of such potency as these agents possess is the temperature at which they are kept; low temperatures, such as are obtained in cold storage, favor conservation, while ordinary room temperatures contribute to deterioration of their specific properties. Manufacturers, generally, are careful about the proper keeping of biologic products while in their hands; but they have no control over the preparations after they are placed on the market, though a commendable effort is made on the part of some manufacturers to follow up and safeguard their preparations.

The lack of uniformity in the dating of these products is very striking. For the same material, one manufacturer will fix an expiration date of four months, others, one year or even eighteen months. Obviously this lack of uniformity is unfair to the manufacturer who endeavors to supply a product as fresh as is commercially practicable, and it also may lead the physician to form a false opinion regarding the potency of certain biologic products.

That the physician may know the age of a given product when it reaches him, and that he may be in position to judge whether it has been kept unduly long under conditions which are deemed unfavorable, the Council on Pharmacy and Chemistry has passed a resolution requiring that, in order to be accepted for New and Nonofficial Remedies, biologic products must have placed on the package also the date of manufacture. Since there is no potency standard for biologic products other than for diphtheria and tetanus antitoxins, the term "date of manufacture," or, at the pleasure of the individual manufacturer, "date of issue," "manufactured" or "issued," shall be acceptable in accordance with these conditions:

The terms "Date of Manufacture" or "Manufactured" or "Date of Issue" or "Issued" to be used:

1. For products for which an efficient potency standard exists, the date of testing shall be taken as the date of manufacture. For vaccine virus date of satisfactory potency test shall be taken.

2. For other products of animal origin, the date of removal from the animals (e. g., bleeding, in case of serums) shall be taken as the date of manufacture.

3. For products of bacterial origin, the date of the killing of the bacteria shall be taken as the date of manufacture; while for other products, such as those of plant origin (pollen extracts), the date of completing the preparation of the product shall be taken as the date of manufacture.

The terms "Date of Issue" or "Issued" to be used:

When adequate cold storage facilities are available to indicate date of removal from cold storage in accordance with the following: Product may be kept for not to exceed one year at or below +5°C, or for not to exceed six months at or below +8°C, or for not to exceed three months at or below +15° C. This section does not apply to living viruses excepting that vaccine virus may be stored at or below +5° C for not to exceed three months.

This measure, besides safeguarding the public, will prove helpful alike to the conscientious manufacturer and to the physician.

CLEANER ADVERTISING

The Lexington (Ky.) Leader Takes an Inventory

The movement toward cleaner advertising and especially toward truthful advertising grows apace. The subject of clean advertising cannot be raised without "patent medicine" advertising obtruding itself, for it has long been recognized by advertising men that publicity at its worst is to be found in the "patent medicine" field. It is for this reason that the defenders of the nostrum interests can never discuss the "truth in advertising" movement and especially the activities of the various vigilance committees of the Associated Advertising Clubs of the World without becoming incoherent.

A year and a half ago the Lexington *Leader* decided that it wanted to be a newspaper "which can be read aloud in the family circle, in mixed company, without embarrassment, by any member of the family, young or old, boy or girl." It found that its ambition in this direction "could not be realized if the general run of patent medicine advertising was accepted." The problem thus clarified, the paper determined practically to eliminate all "patent medicine" advertising. On the last day of the old year the *Leader* took a mental inventory of its condition and gave the results in an editorial from which we quote in part:

"August 1, 1915, a little less than a year and a half ago, it was determined by the management to close the advertising columns of the Lexington *Leader* to the general run of patent medicine advertisements and to advertisements of intoxicating spirits, distilled and fermented.

"Since that date the *Leader* has rejected offers of advertising of this character to the amount of 16,625 inches. This, at the present rate of foreign advertising, would have increased the gross revenue of the newspaper $4,156.25.

"On and after January 1, 1917, the advertising columns of the *Leader* will be absolutely free from all advertising of this nature which does not measure up to the high standard established by the management.

"The management of the *Leader* is ambitious to publish a newspaper which can be read aloud in the family circle, in mixed company, without embarrassment by any member of the family, young or old, boy or girl, this rule to apply to both the news and the advertising columns of the paper.

"It was found that this ambition could not be realized if the general run of patent medicine advertising was accepted, hence it was determined to practically eliminate all of this class of publicity.

"This revolutionary, and at the same time very expensive, change of policy by the Lexington *Leader*, it is confidently believed, will be appreciated by both the home reader and the home advertiser. There is a growing demand for a newspaper that is 'One Hundred Per Cent. Clean—One Hundred Per Cent. Trustworthy'."

In the same editorial the *Leader* gave a list of advertising contracts which had been offered to and rejected by it since it inaugurated its new policy, together with the number of inches of space called for in each contract. The list is too long to reproduce in full but some of the larger items are worth noting. Here they are:

	Inches		Inches
"Nuxated Iron"	500	"Reserve Remedy Company"	2142
"Swamp Root"	500	"Tanlac"	2500
"Wine of Cardui"	1000	"Lydia Pinkham"	3000
"Haarlem Oil"	1071		

There are many other items in the list that are of interest to those who are familiar with the facts concerning various quack remedies. We find, for instance, that the *Leader* rejected advertisements of Charles A. Tyrrell, the exploiter of the "J. B. L. Cascade," a device whose advertisements are accepted by magazines whose pretensions in the interests of the public health are greater than their performances, "Mayr's Stomach Remedy," the "Eckman Alterative" consumption "cure," "Duffy's Malt Whiskey," "King's New Discovery"—these are among many other products which the *Leader* in its desire to publish a newspaper that would not be an embarrassment in the family circle found it desirable to debar from its advertising pages. Nor has this strictness resulted in the commercial ruin of the Lexington *Leader* for in another part of the editorial quoted above we read:

"It is extremely gratifying to the *Leader* management to be able to state that, notwithstanding the large amount of what this newspaper considers undesirable advertising rejected during 1916, the volume of foreign advertising has steadily increased and will show a net gain for 1916 over 1915."

Above its editorial page the Lexington *Leader* carries this quotation: "The false can never grow into truth by growing into power." Applying it to the "patent medicine" business, one might search far to find a more appropriate sentiment.

Correspondence

Compulsory Health Insurance

To the Editor:—The letter on this topic by Dr. W. D. Chapman (THE JOURNAL, Feb. 17, 1917, p. 566) contains one or two errors which I wish to correct.

In this country about one tenth of the 30,000,000 workers are organized, and of the organized workers only about 548,000, or one fourth, are insured for sick benefits through the international trade unions, and not one tenth of all the workers, as your correspondent states. As a matter of fact, voluntary insurance against sickness is far less developed in this country today than it was in Great Britain prior to the passage of the national insurance act.

The free choice of physician, for which German physicians have been contending and which the British doctors gained at the outset, is already a provision of the health insurance bill which is being introduced in the legislatures of the leading industrial states.

Even if preventive medicine and the extended use of medical charities could provide the same medical care as that offered by health insurance, the worker, without insurance, is too often left without resources with which to meet the financial burden of sickness. Both medical and cash assistance are needed by the worker.

JOHN B. ANDREWS, New York.
Secretary, American Association for Labor Legislation.

Coagulation Time of the Blood in Pneumonia

To the Editor:—The article on this subject by Drs. Minot and Lee (THE JOURNAL, Feb. 17, 1917, p. 545) calls for brief comment. Since the observations reported in the paper by Dr. Meeker and myself on "Coagulation Time in Lobar Pneumonia, with Statistics and an Experimental Study of Its Causes" (THE JOURNAL, Nov. 25, 1916, p. 1591) were carried out in my hospital service, I hasten to assume all responsibility for errors both as to the method employed and the results obtained. In our paper, the reason the blood was taken from the ear lobes and finger tips was thus stated: "It was feared

that an unwarranted degree of discomfort would be caused by venipuncture at intervals of twenty-four hours in patients suffering from lobar pneumonia."

Subsequently, as it was found that it was quite practicable to tap a vein with a platinum needle without an objectionable degree of annoyance to the sufferer from lobar pneumonia, the blood was drawn directly from the vein so as to eliminate the possible interference with the test from admixture of the "tissue juices." So far as the criticism of the method employed in the observations previously recorded is concerned, therefore, I have no fault to find with my critics, but I still feel strongly that science demands future verification of their statement that "the coagulation time of blood in pneumonia is generally prolonged."

The results of daily observations in ten cases made on blood drawn from the veins in my service at the Medico-Chirurgical Hospital, since the publication of the joint paper by Dr. Meeker and himself, show an abbreviation of the coagulation period, and hence confirm those obtained by using blood derived from the ear lobe and finger. These and future findings will be made the basis of another paper at a later date.

J. M. Anders, M.D., Philadelphia.

"A Medical Commission with No Medical Man on It"

To the Editor:—In Current Comment (The Journal, Jan. 27, 1917, p. 292), under this heading, you refer to Mrs. Axtell as follows: "a Mrs. Axtell of Bellingham, Wash., a social worker and a defeated candidate for Congress." I cannot think any reflection was intended or meant to be implied in this comment. I trust you will publish this together with your denial that any reflection on Mrs. Axtell was intended.

W. H. Axtell, M.D., Bellingham, Wash.

[Comment.—It was the principle, not the persons, that was discussed in the comment in The Journal. We are also informed that Mrs. Axtell has had twenty-five years of service in social work, and was formerly a member of the Washington state legislature.]

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HEXAMETHYLENAMIN WITH SODIUM ACID PHOSPHATE

To the Editor:—1. Hexamethylenamin when administered in the treatment of cystitis or pyelitis acts as a urinary disinfectant in acid urine. Occasionally the urine in such infections is found alkaline, neutral or only slightly acid to litmus. Would it not be theoretically good therapeutics to prescribe hexamethylenamin in such cases with some drug which renders the urine acid?

2. Bastedo's Materia Medica, Pharmacology and Therapeutics, p. 478, says:

"Jordan (1911) gave 10 grains (0.7 gm.) [hexamethylenamine] three times a day and found that when the urine was alkaline or of low acidity there was no germicidal effect. When the urine was alkaline he could obtain the effect by administering *acid sodium phosphate* to acidify the urine and when the urine was acid he could lessen the effect by administering potassium citrate."

I cannot find the acid sodium phosphate listed as a drug. Is it so used? If so, what is the dosage? Chemically it is a monobasic salt, H_2NaPO_4 plus water. What other drugs acidify the urine?

Please omit my name. K. R.

Answer.—1. Yes.

2. New and Nonofficial Remedies describes sodium acid phosphate, and lists the following brands of this drug:

Sodium Acid Phosphate-M. C. W., Mallinckrodt Chemical Works, St. Louis.
Sodium Phosphate Monobasic-Merck, Merck & Co., New York.
Sodium Acid Phosphate-Squibb, E. R. Squibb and Sons, New York.
Sodium Acid Phosphate, Monobasic-P. W. R., Powers-Weightman-Rosengarten Company, Philadelphia.

The dose of sodium acid phosphate is from 1 to 1.5 gm. repeated frequently until the urine becomes acid. It may be administered in sweetened water like lemonade. It should not be prescribed in solution with hexamethylenamin.

SONDERN'S LINE OF RESISTANCE AS AID TO PROGNOSIS

To the Editor:—What is Sondern's line of resistance mentioned in The Journal, Feb. 10, 1917, p. 496? E. H. B.

Answer.—F. E. Sondern over ten years ago emphasized the importance of the differential leukocyte count in differential diagnosis, but above all in estimating the resisting powers of the organism. He said that the rise in the relative percentage of polymorphonuclears shows the increasing absorption of toxins, and the rise in the numbers of leukocytes shows the fight the body is putting up against the infection. When both rise parallel there is less to fear than when the relative polymorphonuclear percentage outstrips the leukocytes. A chart for the curves, according to the suggestion of C. L. Gibson (*Annals of Surgery*, 1906, **43**, 485), has the leukocyte scale on the left and the polymorphonuclear scale on the right, the chart being divided into 1 sq.cm. squares, each centimeter representing 1,000 leukocytes on the left scale and 1 per cent. polymorphonuclears on the right side, starting from a horizontal line, one end of which represents a leukocytosis of 10,000 and the other end a relative polymorphonuclear proportion of 75 per cent. A line drawn between the corresponding dots showing the leukocyte findings and the polymorphonuclear percentage at each examination gives insight into the processes going on in the body. The vertical difference in centimeters between the levels can be called the index of resistance. The more nearly horizontal, the better the outlook.

SCHLOSS MILK

To the Editor:—Please give me the formula and method of making Schloss milk. I should also appreciate references to detailed articles written concerning it. F. T. Billings, M.D., Pittsburgh.

Answer.—The following is a formula for Schloss whey modified milk:

For infants under 3 months:	
Twenty per cent. cream	140 c.c.
Full milk	140 c.c.
Water	700 c.c.
Potassium chlorid	0.2 gm.
Dextrin and maltose	35 gm.
Flour	15 gm.
Nutrose	5 gm.
For infants over 3 months:	
Twenty per cent. cream	140 c.c.
Full milk	140 c.c.
Water	700 c.c.
Potassium chlorid	0.2 gm.
Dextrin and maltose	50-70 gm.
Nutrose	5 gm.

These are intended to make 1 liter (quart) of the mixture. It contains the same percentage of salts and fats as human milk, but less protein and less sugar, without the dextrin and maltose and the nutrose. If flour is added it must be boiled with the sugar, casein preparation and water for fifteen minutes. If no flour is used the mixture is simply brought to the boiling point.

The details and formula for making Schloss whey modified milk will be found in J. S. Leopold's article in the *American Journal of Diseases of Children*, September, 1914, together with a report on its use in a number of cases. References to the literature on this form of feeding are as follows:

Schloss, E.: Ueber Säuglingsernährung, monograph, Berlin, S. Karger, 1912.
Leopold, J. S.: Experiences with Whey Modified Milk in Infant Feeding. *Am. Jour. Dis. Child.*, September, 1914, p. 196; *Arch. Pediat.*, January, 1914.
Gellhorn, W.: Casein-Milk Feeding in Infancy and Childhood, The Journal, Sept. 4, 1915, p. 853. In this article various methods, including that of Schloss, for modifying milk in infant feeding are discussed.

Legal Status of Nurse as Anesthetist.—As yet the number of court decisions on record is not sufficient to show whether graduate nurses may, with impunity, practice as anesthetists. The opinion of lawyers in New York state is that surgeons may employ women in the capacity named, but that in doing so they, the surgeons, assume liability for the result. If the administration of anesthetics is a part of the practice of medicine, anesthetics may be administered only by responsible licensed physicians. If a surgeon chooses to employ an anesthetist having no legal medical qualification, he thereby tacitly assumes full responsibility for and undertakes to control the anesthesia, the anesthetist being regarded merely as his technical assistant.—S. S. Goldwater, M.D., *Modern Hospital*, November, 1916.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, April 3-4. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.

CALIFORNIA: Los Angeles, April 10. Sec., Dr. Charles B. Pinkham, 529 Forum Bldg., Sacramento.

COLORADO: Denver, April 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: Regular: New Haven, March 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.

CONNECTICUT: Homeo.: New Haven, March 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

CONNECTICUT: Eclectic: New Haven, March 6. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

DISTRICT OF COLUMBIA: Washington, April 10. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

IDAHO: Boise, April 3. Sec., Dr. Charles A. Dettman, Burke.

MAINE: Portland, March 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MASSACHUSETTS: Boston, March 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

MINNESOTA: Minneapolis, April 3-6. Sec., Dr. Thomas S. McDavitt, 741 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, March 26-28. Sec., Dr. J. A. B. Adcock, 325 E. High St., Jefferson City.

MONTANA: Helena, April 3. Sec., Dr. W. C. Riddell, Helena.

OKLAHOMA: Oklahoma City, April 10-11. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, April 2. Sec., Dr. Quevedo Baez, San Juan.

RHODE ISLAND: Providence, April 5-6. Sec., Dr. Gardner T. Swarts, State House, Providence.

WYOMING: Laramie, March 14-16. Sec., Dr. H. E. McCollum, Laramie.

Montana October Report

Dr. William C. Riddell, secretary of the Board of Medical Examiners of the State of Montana, reports the written examination held at Helena, Oct. 3-5, 1916. The total number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 25, of whom 17 passed and 8 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Bennett College of Eclectic Medicine and Surgery	(1907)	75.2
Chicago College of Medicine and Surgery	(1916)	77.1
Hahnemann Med. Coll. and Hosp. of Chicago	(1908)	83.8
Northwestern University Woman's Medical School	(1900)	78.3
Rush Medical College	(1914)	83.5
Baltimore University	(1898)	78.2
Johns Hopkins University	(1914)	84.8
University of Michigan Medical School	(1916)	77.7
University of Minnesota	(1916)	82
Barnes Medical College	(1906) 80.5; (1911)	78.8
Washington University	(1916)	80.7
Dartmouth Medical School	(1891)	79.3
Cleveland College of Physicians and Surgeons	(1910)	82.7
Starling-Ohio Medical College	(1913)	83.9
Marquette University	(1915)	79.2
Milwaukee Medical College	(1909)	77.4
FAILED		
George Washington University	(1916)	74.3
Chicago Coll. of Med. and Surg. (1915) 71.5;	(1916)	71.5
Northwestern University	(1910)	74
Rush Medical College	(1897)	73
Fort Wayne College of Medicine	(1892)	52.4
Ensworth Medical College	(1910)	73.8
Laval University	(1913)	64.7

New Mexico October Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports that one candidate was licensed through reciprocity and eleven candidates were licensed on satisfactory credentials, Oct. 9-10, 1916. The following colleges were represented.

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
University of the South	(1909)	Tennessee

College	Year Grad.	Total No. Licensed
LICENSED ON SATISFACTORY CREDENTIALS		
Arkansas Industrial University	(1895)	1
University of Colorado	(1916)	1
Atlanta Medical College	(1914)	1
Baltimore University	(1902)	1
John A. Creighton Medical College	(1907)	1
University of the City of New York	(1893)	1
North Carolina Medical College	(1910)	1
Cleveland College of Phys. and Surgs.	(1914)	1
Western Pennsylvania Medical College	(1891)	1
University of Toronto	(1897)	1
National School of Medicine, Mexico	(1897)	1

Book Notices

FEEDING THE FAMILY. By Mary Swartz Rose, Ph.D., Assistant Professor, Department of Nutrition, Teachers College, Columbia University. Cloth. Price, $2.10. Pp. 449, with illustrations. New York: The Macmillan Company, 1916.

More and more attention is being given to the relation of diet to disease and to health. The requirements of a satisfactory diet are varied: they include not only a sufficient number of calories, but also a variety of food which shall stimulate the appetite, a number of esthetic considerations which make food more attractive, and numerous relations to the health of the body. The author has apparently had in mind all these considerations in the preparation of her book.

The first chapter is devoted to a consideration of the calories necessary to fulfil the fuel requirements of the body and to the mineral content of ordinary foods to fill such requirements. The next chapter is devoted to the digestive organs and the variation of diet to avoid disturbances of intestinal action. The following chapters are classified according to the requirements of the various members of the family; for example, food for the adult man, the adult woman, the baby, the child of 2, 3, 5 and 8 years, of adolescence, and for the aged. The whole is then grouped under the question of food for the family, and this is considered in relation to the menus and cost of food and various special dietaries. The latter part of the book considers food for the sick and the convalescent. Here will be found the answers to many questions which may arise in the mind of the physician who is compelled to supply diets for patients with various conditions.

The book is useful and attractive, and can be employed with advantage in the physician's home as well as to the benefit of his patients.

BLOOD-PRESSURE FROM THE CLINICAL STANDPOINT. By Francis Ashley Faught, M.D. Second Edition. Cloth. Price, $3.25 net. Pp. 478, with illustrations. Philadelphia: W. B. Saunders Company, 1916.

Dr. Faught's book offers a practical guide to the use of the sphygmomanometer and the clinical determination of blood pressure. It includes also a general discussion of the interpretation to be placed on blood pressure determinations. The author has combed the literature thoroughly, as is evidenced by numerous references to the most recent periodical literature. So much has recently been written concerning blood pressure that many of the observations of yesterday no longer apply. For this reason Dr. Faught suggests that "the purely scientific investigator should not be too critical of the conclusions drawn" as "the chief effort has been to reduce a very large and complicated subject to a practical working basis."

A TREATISE ON DISEASES OF THE SKIN FOR ADVANCED STUDENTS AND PRACTITIONERS. By Henry W. Stelwagon, M.D., Ph.D., Professor of Dermatology in the Jefferson Medical College. Eighth Edition. Cloth. Price, $6.50 net. Pp. 1309, with 389 illustrations. Philadelphia: W. B. Saunders Company, 1916.

A number of new subjects, among the most important of which is that of occupational dermatoses, have been added to this standard work. It has been revised by the elimination of some old cuts and the addition of many new ones, the deletion of obsolete matter, and the correction of the text wherever necessary to bring its statements into accord with recent observations. It is, therefore, as in past editions, a dependable work on diseases of the skin, to which the practitioner may refer with the assurance that he is being correctly informed and well guided in this branch of his practice.

MOTHER'S GUIDE IN THE CARE OF HER CHILDREN. By Dr. Sigmund A. Agatston, Lecturer on Diseases of Children at the New York Polyclinic Medical School. Cloth. Price, 50 cents. Pp. 85. New York: James T. Dougherty, 1916.

This book is apparently a collection of the author's notes on the care of children. It contains much material of value loosely classified, but well indexed so that the mother may seek out the answer to any question which may arise. The book is not so complete or so well organized and prepared as many others already available. Its chief recommendation is its small price.

Social Medicine, Medical Economics and Miscellany

Confessions of a Chiropractor

An article—actually as an advertisement—in the Ogden (Utah) *Examiner*, Oct. 1, 1916, evidently intended as an argument in favor of chiropractic, contains statements which show how little use "healers" of that branch have for education. Preliminary education is foolish, nay burdensome. Note the following:

> Education which has no relation to the theme or subject under consideration becomes burdensome and therefore detrimental.

Greek and Latin, for example, are

> Both dead tongues and, outside of those engaged in translating manuscripts, are used only to display pedantry; they are of no value to chiropractors.

This is especially worth nothing:

> They would compel us to study bacteriology. This is of no value to the chiropractor. It is not worth while to spend time, energy and money to microscopically examine infinitesimal mites or to group and classify them.

Of course, there is no such thing as blood poisoning, or infections; diphtheria and its cure with antitoxin are fabrications from some overworked anemic intellect, and even if there are contagious diseases, smallpox, spinal meningitis, infantile paralysis or others, all, forsooth, may be cured by the magic touch of the chiropractor applied to the patient's spine. Why bother one's head regarding microbes? As to materia medica, oh, horrors!

> We would also be required to learn "materia medica." What on earth would we do with that ponderous knowledge, we who abhor the very name of drugs and repudiate their use?
>
> There is also chemistry, which has nothing in common with chiropractic and cannot be made an adjunct to it.

Evidently education generally has "nothing in common with chiropractic" or is it that chiropractic has nothing in common with education?

> Greek, Latin, bacteriology, chemistry and materia medica would be of no more use (to chiropractors?) than a whipsocket would be in an automobile or a smoke stack to an aeroplane.

What on earth is the use of spending four years in high school, two years in college, four years in a medical school and a year or more as an intern in a hospital and getting all that "burdensome and detrimental" knowledge, when you can become a full-fledged chiropractor, and after three months or possibly less of correspondence study have the right to treat the sick!

All of this reminds one of the old adage that "A wise man knows a fool because he has once been foolish, but a fool cannot know a wise man because he has never been wise."

Payment for Treatment of Venereal Disease

H. Schönheimer (*Deutsch. med. Wchnschr.*, Oct. 5, 1916, p. 1232) expatiates on the spread of venereal diseases since the war, and the necessity for systematic and thorough treatment, accessible to all who need it, in order to protect others. The treatment should include infected wives. The question now is, Who is to pay for this, and how shall it be paid? Overcrowding and inadequate remuneration will necessarily entail inadequate treatment. The Invaliditätversicherung, or department of social insurance, seems to be the party to pay for the medical work, and a tentative agreement has been made in the Rhine province between this Landesversicherungsanstalt and the organized profession, the Aerztekammer, for treatment of the insured who are not enrolled in the Krankenkassen. According to this agreement, each treatment is to be paid for separately, but the total to be paid for a six weeks' course of treating syphilis is not to exceed 75 marks. For chronic gonorrhea there are to be not more than three treatments a week, with the catheter, rinsing the bladder or massaging. For the first two injections of salvarsan, 10 marks each; the following, 5 marks, and not more than six in the course. For each injection of mercury, 2 marks; for each examination of the urine (including microscopic), 2 marks; written reports, dilatations and massaging the prostate, each 3 marks.

In Berlin there is talk of an agreement by which a lump sum of 7.5 marks is to be paid by the month for the treating of each case. This is less than the social insurance contract rate of 5 marks a year, for this is per capita for all the insured, the well as well as the sick, while effective treatment of venereal disease requires intensive measures for a month. Schönheimer adds: "Of course there have been threats that if the local physicians decline these terms, others will be imported at a fixed salary; but the days are past, thank heaven, when it was possible to intimidate physicians with this threat. The arrangement would be discredited at once before the public if it should be put through exclusively with low-grade. It is for us to watch over the first steps in this comparatively new field. There is much to be done if the evil is to be rooted out. There are other affections, besides the venereal, the combating of which is an urgent task for the public welfare. This should all be done with the glad cooperation of physicians, but it should not be at the cost of their financial ruin."

The Faddist

We are a nation of cultists and faddists—any new doctrine becomes a rallying point for a body of devoted followers who enthusiastically propagate their hobby, even though it be so inordinately ridiculous as to demand the attention of the alienists. Medicine has suffered particularly from these peculiar minded advocates. "Sinapis" in the *Medical Press and Circular*, considering a recently published pamphlet on "Human Temperaments," by Dr. Charles Mercier, says that Mercier is properly scornful about the man who treats a disease and fails to treat his patient. "He pleads for a hearing, if not for honor, for the ancient physicians who studied the mental qualities 'occurring in groups' to which they gave the name temperaments." Particularly pointed are the observations of Mercier on the faddist.

> Of the positive fads, the most numerous are those which are supposed, on very insufficient evidence, to contribute to health. The health faddist eats strange food. He lives on fruit and nuts, or toast and water; his fruit and nuts, or whatever the faddy food is, must come from a particular source of supply and be of a particular brand. His beverage must be measured to the thimbleful. If he drinks tea, it must draw for so many seconds by a stop-watch, and the milk must be sterilized. He wears strange clothes; he must or must not wear certain fabrics next his skin; his clothes must be of special material, of a special brand, and must be made by a certain tailor and no other. He wears no hat, or his hat must be of a faddy shade or faddy material, or both. He has a certain ritual of exercises; breathing exercises, exercises to strengthen the lungs, the heart, the stomach, the liver, the arms, the legs, and the rest of him; and this ritual he performs daily with all the zeal of a religious devotee, for to him it is a religion. He must chew each mouthful so many times, and cannot talk at meals because he is engaged in counting the movements of his jaws. All this he does to preserve a life that is not worth preserving: to keep in health a body that serves no useful purpose. His motto is: *Propter vitam vivendi perdere causas.*

Eclampsia Rare on War Diet in Germany

According to an abstract in a Danish exchange, the statistics from the largest three maternities in Berlin show that eclampsia is comparatively rare at present. The proportion has dropped in one maternity from 2.6 per cent. of 2,004 childbirths in 1913 to 0.8 per cent. of 1,430 in ten months of 1916; in the Charité, from 2.4 per cent. of 3,570 births to 0.57 per cent. of 1,400, and at the Virchow Hospital from 1.2 per cent. of 3,664 childbirths to 1 per cent of 2,462. Warnekros and Ruge ascribe this reduction of the number of cases to the changes in the diet imposed. In the cases in which eclampsia occurred, it was mild and brief, practically abortive. In the one exception, a quite severe case, it was found that the woman's husband, being a diabetic, had secured large extra amounts of meat and butter. The tables given show that the number of cases of eclampsia was less in 1913 than in the year or two before, a gradual decline being evident; but, since the war began, the drop has been at the Charité 75 per cent., and at the women's clinic over 66 per cent. The conclusion seems inevitable that restriction of fat and meat tends to ward off eclampsia.

Medicolegal

Medical Practice Act Constitutional—Herbalists Must Have Certificates

(Ex parte Chow Juyan (U. S.), 235 Fed. R. 1014)

The United States District Court, in California, in denying the petitions for writs of habeas corpus of several Chinese who practice the art of healing by the use of herbs, says that the petitioners were convicted in the state courts of practicing without the medical certificate required in California by the act of June, 1913, the conviction was upheld by the district court of appeal, and an application to the Supreme Court of California for a writ of habeas corpus was denied, after which a similar application was made to this court. The basis of the petitions was the alleged unconstitutionality of said act for a number of reasons. It was claimed that the title is defective; but such defect, if it exist, is one solely under the state constitution, and the courts of the state have held the act to be valid. It was further urged that the act is unconsitutional because of its provisions regulating drugless healers, in that it defines the drugless practitioner as one who treats diseases without the use of drugs and without in any manner severing or penetrating any of the tissues of human beings except the severing of the umbilical cord. The argument was that such practitioners do continually by manipulation and adjustment sever the tissues of human beings in using their particular mode of treatment. The district court of appeal disposed of this contention by the statement that it is evident from the whole context that the word "sever" as therein used means a severance by cutting. In addition, it may be said that the petitioners are not drugless practitioners, and the provision in question does not affect them. It was also urged that the act is unconstitutional as applied to the petitioners because it gives to the board of medical examiners the power arbitrarily to determine the fitness of applicants for certificates and the standard of colleges as a matter of mere personal approval, without regard to any standard fixed by the legislature itself, and that such delegation of power is unconstitutional. But such delegation, even if conceded, contravenes no provision of the constitution of the United States, nor any law of Congress, that has been called to this court's attention. Whether or not it contravenes a provision of the state constitution is a matter within the cognizance of the courts of the state, and they have held that it does not. It was also urged that the act interferes with interstate commerce because it prohibits or unduly burdens the sale of imported herbs. But it does not prohibit the sale of such herbs, and, if it burdens such sale, it is only because the seller, in addition to selling the herbs, acts also as a physician in prescribing their use, and the prescribing is burdened to the extent that the prescriber must have the medical certificate required. It is not Chinese herbalists alone who must secure such certificate, but all herbalists; that is to say, all persons who treat others by the use of drugs, whether exclusively herbal drugs, or otherwise. There appears no reason why this court should interfere with the enforcement of the act in question.

Narrowing Construction of Medical Practice Act

(State vs. Fite (Idaho), 159 Pac. R. 1183)

The Supreme Court of Idaho reverses, with instructions to dismiss the action, a judgment pronounced against the defendant, a chiropractor, on his conviction of having practiced medicine within the state without having obtained a license so to do. The court says that the practice of medicine in Idaho is regulated by Chapter 17, Title 8, of the political code (Sections 1341 to 1356 inclusive). Section 1353 provides: "Any person shall be regarded as practicing medicine and surgery, or either, who shall advertise in any manner, or hold himself or herself out to the public, as a physician and surgeon, or either, in this state, or who shall investigate or diagnosticate, or offer to investigate or diagnosticate, any physical or mental ailment of any person with a view to relieving the same as is commonly done by physicians and surgeons, or suggest, recommend, prescribe or direct, for the use of any person, sick, injured or deformed, any drug, medicine, means or appliance for the intended relief, palliation or cure of the same, with the intent of receiving therefor, either directly or indirectly, any fee, gift or compensation whatsoever. . . ." The proper interpretation of that section is the court's chief concern in this case. The apparent lack of harmony among the reported cases may be accounted for, to a considerable extent at least, by the difference in the language employed by the different legislatures in formulating statutes on the subject. These statutes may be divided into two classes: (1) Those which seek to prevent the use of drugs, medicines, surgical instruments and appliances by persons unskilled in their use, and (2) those which seek to prevent the practice, or pretended practice, of the healing art, in any manner, by persons who do not possess sufficient educational qualifications to enable them to pass a medical examination such as is prescribed by a board of medical examiners provided for by law. The statute of Idaho here under consideration belongs to the former classification. Constitutional provisions and statutory enactments should be read and construed in the light of conditions of affairs and circumstances existing at the time of their adoption. The law of Idaho regulating the practice of medicine and surgery, of which Section 1353 is a part, was enacted by the legislature in 1899. Up to that time no provision had been made for the appointment of a state board of medical examiners, or for subjecting applicants for a license to practice that learned profession to an examination touching their educational qualifications to do so. At that time chiropractic was unknown in the state, and but little, if anything, was known of osteopathy. Those who offered to heal the afflicted were either graduates of reputable schools of medicine and surgery, or were mere pretenders who assumed to practice that profession without having so graduated. It seems to the court to be perfectly clear that the legislature, recognizing drugs and surgical instruments to be dangerous in the hands of the unskilled, sought, by the enactment of Chapter 17, Title 8, of the political code, to reach and prohibit the pretenders rather than practitioners of branches of the healing art which had not yet come into existence, or were, at least, unknown in Idaho. Subsequent legislatures seem to have adopted this view, for, in 1907, a law regulating the practice of osteopathy was enacted; also one regulating the practice of optometry; and in 1911 an act was passed providing for and regulating the examination and registration of graduate nurses and fixing their qualifications. The legislature has given to the clause contained in Section 1353, "as is commonly done by physicians and surgeons," controlling force, and has limited the prohibition contained in the chapter in question to persons who would attempt to practice medicine and surgery without first having obtained a license so to do by the words "physicians and surgeons," as those words were used and commonly understood by the people of Idaho at the time the law was enacted. The court believes this to be a correct interpretation of that statute, and that it was the intention of the legislature which enacted it that it should be so limited. Wherefore the court concludes that the practice of chiropractic is not the practice of medicine and surgery as defined in Section 1353, and that the defendant was erroneously convicted.

Patient Not Bound to Let Surgeon Failing Once Perform Second Operation

(Atlas Portland Cement Co. vs. Hagen (U. S.), 233 Fed. R. 24)

The United States Circuit Court of Appeals, Eighth Circuit, in affirming a judgment in favor of plaintiff Hagen for damages for personal injuries sustained in the service of the defendant company, says that the company asked the giving of an instruction that: "The court instructs the jury that the defendant is not responsible for any injury to plaintiff caused by any act, operation, or conduct of plaintiff's physicians or surgeons." This instruction was refused. It was erroneous on its face, but especially so as shown by the record. The plaintiff testified, and the jury had a right to believe, that the company's surgeon set his limb; that one day, when they were putting him on a bed pan, he felt the bones slip. This was three days after the injury. He called the attention of the

surgeon and the nurse to it, but the surgeon did not even make an examination. The plaintiff remained at the hospital six weeks, and was then taken home and remained there a week. At the end of five weeks the bandages were taken off. The surgeon took him home and then pronounced the leg in good shape. In a day or two he came back and the leg was bent, and the next day he again called and wanted to break the leg again. After seven weeks of suffering with this broken leg, more than six weeks after it slipped and the surgeon had been notified, and a bony union had been formed, the plaintiff was justified in declining to let the same surgeon break it again and operate further. The plaintiff simply told the surgeon that he could not break it again, and the surgeon then turned the case over to another physician; but, before this, at a conference of the surgeon and several other physicians, it was agreed by all of them that a second operation was necessary. The plaintiff then employed a prominent surgeon to perform a second operation, assisted by three others. These were all competent physicians and surgeons, and there was no evidence of negligence in their selection. From their testimony it appeared that the union formed under the first surgeon was with the ends of the bones overlapping. The new operation was not a success, but there was no negligence on the plaintiff's part in refusing to let the same surgeon perform the second operation, who had concededly failed in the first, perhaps without fault on his part, nor in the selection of new ones; and, if the defendant was liable at all, it was liable for the entire injury which the plaintiff sustained as the result of its negligence in failing to comply with the statute by safeguarding its machinery.

Society Proceedings

COMING MEETINGS

Alabama State Medical Association, Montgomery, April 17-20.
Am. Assn. of Pathologists and Bacteriologists, New York, April 6-7.
California State Medical Society, San Diego, April 17-19.
Georgia Medical Association, Augusta, April 18-20.
Louisiana State Medical Society, Alexandria, April 17-19.
Maryland Medical and Chirurgical Faculty, Baltimore, April 24-26.
Missouri Valley Medical Society, Keokuk, Ia., March 22-23.
New York State Medical Society, Utica, April 24-26.
North Carolina State Medical Society, Asheville, April 17.
South Carolina Medical Association, Spartanburg, April 17-19.
Tennessee State Medical Association, Nashville, April 3-5.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

February, CLIII, No. 2

1 Epidemic Poliomyelitis; Its Nature and Mode of Infection. S. Flexner, New York.—p. 157.
2 Administrative Control of Epidemic Poliomyelitis. H. Emerson, New York.—p. 160.
3 Poliomyelitis; Preparalytic Stage and Diagnosis. J. Ruhrah, Baltimore.—p. 178.
4 Clinical Aspects and Treatment of Acute Poliomyelitis. T. Le Boutillier, Philadelphia.—p. 188.
5 Epidemic Vaginitis in Children. B. K. Rachford, Cincinnati. —p. 207.
6 How Closely Do Wassermann Reaction and Placental Histology Agree in Diagnosis of Syphilis? J. M. Slemons, New Haven, Conn.—p. 212.
7 Von Jaksch's Anemia; Report of Cases. R. G. Stillman, New York. —p. 218.
8 Case of Yeast (Monilia) Infection of Lung. C. E. Simon, Baltimore.—p. 231.
9 Rôle of Leukocytes in Viridans Endocarditis and Effect of Nuclein Injections. H. Fox and F. B. Lynch, Philadelphia.—p. 235.
10 Interpretation of Certain Blood Pressure Ratios. W. J. Stone, Toledo.—p. 240.
11 Vincent's Angina; Report of Cases. A. T. McClintock, Wilkes-Barre, Pa.—p. 256.
12 Some Facts and Fallacies Concerning Abdominal Adhesions and Bands. G. G. Ross and J. B. Mencke, Philadelphia.—p. 261.
13 Treatment of Syphilis of Central Nervous System with Intraspinal Injections of Mercurialized Serum; Report of Cases. J. M. Wolfsohn, San Francisco.—p. 265.
14 *Hematemesis Due to Chronic Appendicitis, with Explanation of Its Pathologic Physiology. J. H. Outland and L. Clendening, Kansas City, Mo.—p. 273.

14. **Hematemesis Due to Appendicitis.**—In the case cited by Outland and Clendening a true inflammation of the appendix was present. Innumerable small glands in the omentum and mesentery, hard and universally distributed, pointed to a stream of infection carried up the omentum and deposited at the pylorus. The appearance of the stomach, mottled and covered with fine veins, was the evidence of the result of this bombardment of septic material. The hemorrhage of the stomach was almost certainly due to the seepage from this inflamed gastric mucosa and serosa rather than any rupture of an enlarged vessel. The dyspepsia, the hyperacidity, and the epigastric pain were the reaction of the stomach to this continuous stream of irritation passing from the appendix up the omentum. The authors believe that this explains not only this case but the many cases of dyspepsia exactly simulating the symptoms of gastric and duodenal ulcer in which no ulcer is found, but which in many cases, when the appendix looks innocent enough, are cured by an appendectomy.

American Journal of Syphilis, St. Louis

January, I, No. 1

15 *Chemotherapy of Mercurial Compounds. J. F. Schamberg, J. A. Kolmer and G. W. Raiziss, Philadelphia.—p. 1.
16 *Bladder in Diseases of Central Nervous System; Analytical Study of One Hundred and Seventeen Cases. J. R. Caulk and H. G. Greditzer, St. Louis.—p. 42.
17 Subconjunctival Injections of Salvarsanized Serum in Management of Ocular Syphilis. R. S. Lamb, Washington, D. C.—p. 58.
18 Gumma of Nose. T. J. Harris, New York.—p. 60.
19 Unusual Forms of Syphilis of Nervous System with Particular Reference to Their Diagnosis. J. Collins, New York.—p. 63.
20 Spirochetal Content of Spinal Fluid of Tabes, General Paresis and Cerebrospinal Syphilis. U. J. Wile, Ann Arbor, Mich.—p. 84.
21 Syphilis of Stomach; Report of Cases. H. L. McNeil, Galveston, Texas.—p. 91.
22 Id. Thirty-Five Instances of Organic Gastric Lesions Associated with Positive Wassermann-Noguchi Reactions. F. Smithies, Chicago.—p. 100.
23 Syphilis of Stomach in Its Roentgenologic Aspects. R. D. Carman, Rochester, Minn.—p. 111.
24 *Syphilis and Baby. L. R. DeBuys, New Orleans.—p. 117.
25 Sanitary Attack on Syphilis. W. A. Pusey, Chicago.—p. 125.
26 *Teaching of Syphilis. H. H. Hazen, Washington, D. C.—p. 135.
27 Place of Syphilis in Our Medical Schools and Hospitals. C. J. White, Boston.—p. 144.
28 Importance of Knowledge of Syphilis and Especially of Visceral Syphilis for General Medical Diagnosis. L. F. Barker, Baltimore.—p. 149.
29 Syphilis of Thyroid; Report of Probable Case. L. Thompson, Hot Springs, Ark.—p. 179.
30 Practical Application of Wassermann Test in Diagnosis and Control of Treatament of Syphilis. C. F. Craig, U. S. Army.—p. 192.
31 Plea for Routine Wassermann Examinations for Obstetric and Gynecologic Patients in Hospital and General Practice. R. Peterson, Ann Arbor, Mich.—p. 211.
32 Rabelais' Conception of Syphilis. D. W. Montgomery, San Francisco.—p. 221.

15. **Chemotherapy of Mercurial Compounds.**—The authors' laboratory experiments on trypanosomes and spirochetes point to a greater selective affinity of salvarsan for the *Spirochaeta pallida* than is possessed by mercury. Mercuric chlorid has a much greater organotropic effect than salvarsan; in their experiments mercury was fifty times more toxic for white rats than salvarsan. Some new organic mercury compounds by the authors which far transcend mercuric chlorid in their bactericidal power in the test tube have been prepared. One new compound has shown itself to be over thirty times more powerful in this respect, both by the Rideal-Walker and the "antiseptic" test. These new mercury compounds also exhibit a greater destructive influence on trypanosomes than does mercuric chlorid. Some of these compounds have shown a lower toxicity than mercuric chlorid.

16. **Bladder in Diseases of Central Nervous System.**—Of the 117 cases tabulated by Caulk and Greditzer seven patients have died. Of these, two were tabetics; one had a spinal cord tumor; the other four were unconfirmed cases, or practically 6 per cent. mortality. This mortality has been contributed to chiefly by renal insufficiency, as in the case of the

cord tumor, and one tabetic died of uremia; three patients of the unconfirmed cases died of uremia; one of the tabetics died suddenly of collapse, after being comparatively in good condition. One of the unconfirmed patients died of ruptured bladder from carcinoma.

24. **Syphilis and Baby.**—As soon as it is ascertained that a woman, known to be or to have been syphilitic, is pregnant, treatment is advised to be instituted at once, combining salvarsan or neosalvarsan with mercury and the iodids, and when the baby is born it is determined, as soon as possible, by clinical and laboratory evidences, employing both the Wassermann and syphilitic tests, whether or not he is syphilitic. If the baby's reaction is negative he is closely watched and subsequent examinations are made. If the baby's reaction is positive the baby and mother are both given salvarsan or neosalvarsan, and the mother mixed treatment, and the baby mercurial rubs. There are times, however, when because of the surroundings, medication by mouth is employed instead of the rubs, in which instances calomel or mercury with chalk is given. Occasional Wassermann tests are made to determine when the patient becomes inactive or apparently cured, at which time the treatment is stopped but observations continued. There are times when it becomes necessary to discontinue medication in the baby owing to the overaction of the mercury, because of gastro-intestinal symptoms or loss of weight. After the symptoms subside, the treatment is begun again. It has been DeBuys' custom for many years to employ the rubs in the same place, namely, over the belly, without producing any skin irritation. The plan is to bathe the baby with soap and water, thoroughly rinse the skin, particularly over the belly, dry it thoroughly, rub in the ointment, and put on a flannel binder. This procedure goes on daily, employing the same binder. At the end of a week's time the dose of the ointment is increased and the binder changed. In this way it can readily be seen that the daily dose of the mercury is increased. This is done until the point of tolerance is reached.

26. **Teaching of Syphilis.**—Hazen emphasizes the fact that it is essential to have better teaching of syphilis. This teaching should be essentially clinical, and should be done both in the dispensary and at the bedside. To teach syphilis properly the patients must be well handled, as example is the best teacher. The teaching can be done by one department alone, provided that it has a special corps of select men. In the vast majority of instances one man should head the department, and he should work in harmony with the other departments, so that the whole subject can be handled systematically. The dermatologist is usually the proper man to head this department.

Annals of Surgery, Philadelphia

February, LXV, No. 2

33 *Choice of Operative Procedure in Cancer of Rectum and Pelvic Colon. C. H. Mayo, Rochester, Minn.—p. 129.
34 *Influence of Acidosis on Surgical Procedures. W. A. Lincoln, Calgary, Alberta.—p. 135.
35 Chemotherapy of Experimental Bacterial Infections. J. A. Kolmer, Philadelphia.—p. 142.
36 *Acute Osteomyelitis of Spine; Report of Cases. D. N. Eisendrath and D. L. Schram, Chicago.—p. 147.
37 *Significance of Giant Cells in Bone Lesions. G. Barrie, New York. —p. 151.
38 Composite Study of Celiac Axis Artery. B. Lipshutz, Philadelphia. —p. 159.
39 *Comparison of Permanence of Free Transplants of Bone and Cartilage. J. S. Davis, Baltimore.—p. 170.
40 *Paget's Disease of Nipple and Its Extramammary Occurrence. S. Sekiguchi, Tokyo, Japan.—p. 175.
41 Papilloma of Umbilicus; Report of Case. N. B. Carson, St. Louis. —p. 199.
42 *Healing of Gastro-Intestinal Anastomoses. J. M. Flint, New Haven, Conn.—p. 202.
43 Case of Traumatic Extraperitoneal Rupture of Bladder with Fracture of Pelvis. C. E. Hawkes, Providence, R. I.—p. 222.
44 *Indications for Iodoform Wax Bone Filling of Mosetig-Moorhof; Report of Cases. A. P. C. Ashhurst, Philadelphia.—p. 227.

33. Abstracted in THE JOURNAL, January 20, p. 222.

34. **Influence of Acidosis on Surgical Procedures.**—The points particularly emphasized by Lincoln are the possibility of acidosis occurring in many conditions besides diabetes, and the necessity of a proper and continued examination of the urine for acid by-products. Surgeons should have their eyes open to the danger in the preparation of patients for operations of a too prolonged starvation, especially in the case of children or those suffering from any form of exhaustion. The treatment in most cases reduces itself into supplying sufficient carbohydrate and to the neutralization of those acid by-products present by the administration of alkali. Sodium bicarbonate may be administered until the urine is faintly alkaline. Wakefulness and nervousness should be controlled, if possible, and all forms of exertion prohibited. The operation should be performed as rapidly as consistent with proper technic and under local anesthesia if any degree of acidosis be present.

36. **Acute Osteomyelitis of Spine.**—A man, aged 23, was admitted to the hospital on account of acute urinary retention. The patient looked very septic, the temperature was 104.2 F. (rectal) and pulse 120. He complained of pain over the lumbar region of the spine of a diffuse character. He had always enjoyed excellent health except for an infection of the right index finger, requiring operation one month before. Present illness began suddenly with pain in the back, radiating to the left side, and accompanied by high fever and severe night sweats for twelve days before admission. Examination of the spine at first had shown only diffuse tenderness over the lumbar and sacral regions, but during the last half of the first twenty-four hours there was retraction of the neck with marked rigidity of the entire spine and symptoms of meningeal irritation. No eye changes were found. Leukocytosis was 14,000. Lumbar puncture was done and pure pus escaped from the spinal canal. The *Staphylococcus aureus* was found in pure culture in the fluid. The roentgenograms showed an area of osteoporosis in the body of the third lumbar vertebra. The possible presence of an acute osteomyelitis of the spine in the lumbar region, secondary to the infection of his index finger was suggested and a laminectomy for drainage of the epidural abscess was done. The cauda equina was covered with reddish, fibrinous material and completely enveloped in thick pus lying in the epidural space. There was an apparent walling off of the suppuration in an upward direction, but toward the sacrum there was free pus around the cauda. The patient recovered.

37. **Significance of Giant Cells in Bone Lesions.**—The presence of numerous giant cells within the pathologic mass, on which great stress has heretofore been made as evidence of neoplastic growth, Barrie says, is really the index of a mild inflammatory process. No proof has ever been given that the giant cells, per se, have any effect on true tumor growth. Abundant evidence is to be had regarding their connection with processes of a mild inflammatory character. It is only necessary to bear in mind that the pathology of a localized so-called rarefying ostitis gives a picture similar to the early stage of what has been named giant cell sarcoma. It is not difficult to produce experimentally a lesion in the long bones that exactly resembles a so-called medullary giant cell sarcoma, or tumor, both in its gross and histologic aspects. As it seems impossible of proof that the giant cells have anything to do with tumor growth or tumor formation and all evidence points to their function as scavengers, or foreign body cells, brought forth for a definite purpose, and disappearing when that purpose is fulfilled, it does not seem to Barrie that they may be effectively classed as tumor cells. Neither can the granulation tissue masses that compose these lesions rightly be termed tumors or neoplasms. Barrie emphasizes the opinion expressed in earlier papers that this bone lesion should be grouped with the surgical diseases classified as inflammations. From the clinical picture and gross and microscopic pathology it presents, the term "chronic (proliferative) hemorrhagic osteomyelitis" is, perhaps, more exact and correct than the other terms now in use.

39. **Free Transplants of Bone and Cartilage.**—Experiments made by Davis show that transplants of free cartilage are unchanged during the length of time under observation, while free bone transplants under exactly the same conditions had either disappeared or showed marked degenerative processes.

40. **Paget's Disease of Nipple.**—Sekiguchi is of the opinion that Paget's disease is primary carcinoma of the orifices of the lactiferous or the sudoriferous ducts.

42. **Healing of Gastro-Intestinal Anastomoses.**—The healing of gastro-enterostomies, Flint found, may in parts of the anastomosis, take place by what we are accustomed to call "first intention," that is to say, with a minimum of inflammatory reaction. This occurs when there has been only a slight interference with the circulation of the gastric and intestinal mucosa. The more usual and slower method of healing occurs when there has been more or less interference with the circulation of the mucous membrane of the stomach and intestine. The regeneration of the intestinal mucosa takes place from the crypts which, in the neighborhood of the exudate, have returned to their embryonic form. The regeneration of the gastric mucosa generally begins from the less differentiated epithelium about the mouths of the gastric glands or from tubules that have returned to their embryonic form. The muscularis mucosae begins to regenerate about the second week. It may be repaired from its cut ends or may be, in part, compensated for by means of muscle tissue derived from the severed ends of the tunica muscularis of either the intestine or the stomach. At times the tunica muscularis does not regenerate at all, the infolded muscular layers being held together by new formed connective tissue. In other instances there is considerable regeneration of the muscular layers. After the gastro-enterostomy there is no modification of the intestinal epithelium. The cells appear perfectly normal.

The clinical bearing of Flint's studies emphasizes the fact that it is well to know not only the reaction of the stomach and intestine to the operative traumatism inflicted in performing a gastro-enterostomy but also the reparative process through which the organs pass during the period of healing. One should remember that the new formed anastomosis is the site of a healing ulcerated surface for a period of fourteen days and that, for the first five or seven days, the process is largely destructive, at least so far as the mucosa is concerned. Sight of this fact ought not to be lost in feeding these patients for the first two weeks, during which period the diet should be as light as is compatible with the maintenance of the strength of the patient.

44. **Indications for Mosetig-Moorhof Bone Filling.**—The iodoform wax filling, Ashhurst points out, is most easily applied and proved most satisfactory in cases of bone cavities which are sterile or nearly so at the time of operation. Thus, in cases of bone cysts or early and localized tuberculous disease, primary healing usually may be expected; and even in cases of bone abscess with attenuated infection, healing usually will occur without further interference, though a sinus may persist for some months. But even in cases not as promising as those just mentioned, *Plombierung* is frequently of inestimable advantage.

Archives of Pediatrics, New York

January, XXXIV, No. 1

45 History of Pediatrics in New York. A. Jacobi, New York.—p. 1.
46 Problem of Cardiac Child in New York. L. E. Holt, New York.—p. 12.
47 Diatheses in Their Clinical Aspect. A. Caillé, New York.—p. 16.
48 Hospital Care of Premature Infants. L. E. La Fétra, New York.—p. 22.
49 Communicability of Poliomyelitis. C. G. Kerley, New York.—p. 32.
50 Measles. C. Herrman, New York.—p. 38.
51 Country Care of Cardiac Child; What May Be Accomplished. H. B. Wilcox, New York.—p. 43.
52 Ocular Work and Rest in Childhood. C. W. Cutler, New York.—p. 50.
53 Pediatric Center in New York. H. D. Chapin, New York.—p. 61.

Boston Medical and Surgical Journal

February 8, CLXXVI, No. 6

54 Principles Underlying Surgery of Pancreas. J. B. Deaver, Philadelphia.—p. 187.
55 *Sensory Evidence of Nerve Regeneration. I. H. Coriat, Boston.—p. 192.
56 Possibilities in Social Service for Psychopathic Patients. M. C. Jarrett, Boston.—p. 201.
57 Inebriety from Medical Viewpoint. I. H. Neff, Norfolk.—p. 204.
58 Framingham Health and Tuberculosis Demonstration. D. B. Armstrong, Framingham.—p. 206.
59 Drug Treatment of Morphinism. F. H. Carlisle, Norfolk.—p. 209.
60 Case of Congenital Alopecia. J. H. Blaisdell and A. R. Cunningham, Boston.—p. 210.

February 15, No. 7

61 Acidosis; Summary of Recent Knowledge. J. L. Whitney, San Francisco.—p. 225.
62 Chronic Carbon Monoxid Inhalation and Some of Its Untoward Results. W. J. McGurn, Boston.—p. 231.
63 Epidemiology of Anterior Poliomyelitis Epidemica, 1916. D. M. Lewis, New Haven, Conn.—p. 234.
64 Medical Services and Medical and Hospital Fees Under Workmen's Compensation. F. D. Donoghue, Boston.—p. 235.
65 Physical Examination and Medical Supervision of Factory Employees. W. I. Clark, Worcester.—p. 239.
66 Fallacious Social Philosophy of Health Insurance. F. F. Dresser, Worcester.—p. 244.
67 *Fat Embolism Cause of Shock. W. T. Porter, Boston.—p. 248.
68 Shockless Surgery. Paravertebral Anesthesia with Scopolamin and Narcophin. A. R. Kimpton, Boston.—p. 248.
69 Tonsil Abscess. J. Prenn, Boston.—p. 249.

55. **Sensory Evidence of Nerve Regeneration.**—On the basis of clinical and neuropathologic data the following conclusions are drawn by Coriat: The nerve supply of the skin is not only different for the various receptors for pain and touch, but each of these regenerates at varying periods after a primary or secondary nerve suture. The time necessary for the beginning of the regenerative processes varies, although definite evidence of regeneration could be found within less than a month after suture of a nerve. The best evidence of regeneration, both from the standpoint of time and of successful nerve suture, is seen in the protopathic system. Here, when the tests are carefully made, pain points of various intensity and number can be demonstrated in the midst of an area otherwise completely analgesic. That these pain points are evidences of a regenerative process in the nerve was demonstrated, not only clinically, but was corroborated in one case histologically after a secondary nerve suture. The decrease in the threshold sensibility of these pain points seems to run parallel with the time and success of the nerve suture. As the process of regeneration proceeds, these pain points become less and less sensitive, finally disappearing altogether when regeneration is complete. It seems, also that the true source of regenerative processes in the nerve trunks is to be found in the neurilemma cells of the nerve trunk itself. It is in the presence of the neurilemma cells, or rather on their very active proliferation, that the possibility of regeneration and recovery after injury or suture is based.

67. **Fat Embolism Cause of Shock.**—An attempt was made by Porter to demonstrate by measurements of the blood pressure a causal relation between fat embolism and traumatic shock. He found that by injecting the officinal emulsion of olive oil, thick cream, neutral olive oil into the jugular vein of cats he could reproduce a clinical picture essentially similar to that of traumatic shock in human beings. The essential feature of the traumatic shock is a characteristic fall of blood pressure. Fat in the blood stream is not injurious per se; its injurious effects are the product of fat embolism. Shock is most frequent after shell fractures, especially of the femur; therefore, Porter concludes that fat embolism is a cause, though not necessarily the only cause, of shock after fracture of the bones.

Bulletin of Johns Hopkins Hospital, Baltimore

February, XXVIII, No. 312

70 *Regeneration in Peripheral Nerves. E. G. Kirk and D. D. Lewis, Chicago.—p. 71.
71 *Significance of Xanthochromia of Cerebrospinal Fluid. T. P. Sprunt and J. E. Walker, Baltimore.—p. 80.
72 *Multiple Spontaneous Intracerebral Hemorrhages. P. Greenacre, Baltimore.—p. 86.

70. **Regeneration in Peripheral Nerves.**—Forty-one specimens were studied by Kirk and Lewis. It was noted that in the immediate vicinity of nerve trauma associated with break of continuity there occurs an accelerated hyperplasia of the neurilemmal elements which results in the early formation of protoplasmic bands. These develop in both proximal and distal stump and tend to bridge the defect. Along these

protoplasmic pathways the regenerating axis-cylinders from the central stump pass. Whether they reach the distal stump and neurotise it depends largely on the extent to which these preformed conduits have successfully prepared the way. All efficient regeneration of nerve fibers (axis-cylinders) is from the central stump. All regenerating nerve fibers, whether the outgrowth of medullated or of nonmedullated axones, are in their early stages nonmedullated. All medullation begins proximally and proceeds distally, appearing only in those parts of the new axis-cylinder which have acquired an age of 5 or 5½ weeks (in the dog).

71. **Significance of Xanthochromia of Cerebrospinal Fluid.**—Five clinical cases and an analysis of 100 cases from the literature form the basis of this report. Sprunt and Walker have previously called attention to the clear, yellow spinal fluids occasionally observed at lumbar puncture. These fluids are divided into two main groups: 1. Those in which the color is due to dissolved hemoglobin or its derivatives, and which as a rule do not coagulate spontaneously and contain only a small amount of globulin. Such fluids usually are associated with brain tumors in contact with the meninges or ventricles. 2. The larger and more important group comprises those cases showing the so-called Froin's syndrome, in which the fluid is transparently clear, yellow, coagulates spontaneously, contains large amounts of globulin, may or may not show pleocytosis, and gives no positive tests for hemoglobin. This is a "compression syndrome," its main determinants being the isolation of a lumbar culdesac, in which the spinal fluid stagnates, and probably some vascular changes within its walls. Clinically, with negative roentgenogram of the vertebral column, it is strongly suggestive of a tumor of the spinal cord, although it may also be associated with intradural inflammatory processes.

72. **Multiple Spontaneous Intracerebral Hemorrhages.**—Out of 128 cases of intracerebral hemorrhage analyzed by Greenacre in twenty-four (about 18 per cent.) the brain showed discrete multiple hemorrhages, none of them being traumatic. Plurality of hemorrhages was represented in three brains by three distinct sites of hemorrhage, and in the remaining twenty-one by two. The combination of one hemorrhage into the internal capsule or basal ganglia and one into the pons was most frequent, occurring in fifteen brains (63 per cent.). Of the seven brains (32 per cent.) in which both hemorrhages were into the cerebral hemispheres, five presented bilateral symmetrical hemorrhages implicating both internal capsules or basal ganglia. One brain contained hemorrhages into the cerebrum and the cerebellum, and one hemorrhage into the cerebellum and pons. In one brain only did the pontine hemorrhage appear to be primary, a single large clot in the center of the pons being associated with multiple punctate hemorrhages in the left internal capsule. The appearance of the pontine lesions varied greatly. In eight brains they were numerous and small, scattered irregularly throughout the pontine substance. In seven brains, moderately large hemorrhages occupied the center of the pons, filling the fourth ventricle and surrounding tissue.

Records of fifteen cases of traumatic pontine hemorrhages were examined for the purposes of comparison. Twelve of the fifteen (80 per cent.) occurred with basal skull fracture of the posterior and middle fossae. In only four (28 per cent.) was there a degree of arteriosclerosis sufficient to be detected grossly, in contrast to 67 per cent. of the group of secondary spontaneous pontine hemorrhages. The traumatic hemorrhages are almost uniformly punctate, frequently grouped around the periphery of the pons, and connected with small subpial extravasations and numerous lacerations, whereas the spontaneous pontine hemorrhages are remarkably free from such obvious contusions. These differences are frequently of great medicolegal importance. Greenacre suggests that the liability of the pontine arteries to secondary rupture is due probably to their anatomic peculiarities (in that they are short, small, terminal branches given off nearly at right angles from a large trunk), and possibly to a disturbance of blood pressure in the circle of Willis with a back flow into the posterior branches.

Illinois Medical Journal, Chicago

February, XXXI, No. 2

73 Some Objections to Health Insurance Legislation. E. H. Ochsner, Chicago.—p. 77.
74 Some Interesting Laboratory Investigations in Tuberculosis. H. J. Corper, Chicago.—p. 81.
75 Clinical Application of These Problems. W. A. Gekler, Chicago. —p. 86.
76 Influence of Mixed and Secondary Infection on Pulmonary Tuberculosis in Man. R. T. Pettit, Ottawa.—p. 88.
77 Tuberculin Therapy. L. J. Quillin, Streator.—p. 91.
78 Therapeutic Value of U. S. P. Tincture of Iodin in Treatment of Tuberculosis and Other Infectious Diseases when Properly Administered and Given in Progressively Increasing Doses. J. Ritter, Chicago.—p. 94.
79 Chemotherapy in Tuberculosis. M. W. Harrison, Collinsville. —p. 99.
80 Pregnancy in Tuberculous. E. M. Heacock, Chicago.—p. 100.
81 Diagnosis of Early Pulmonary Tuberculosis. G. Halperin, Chicago.—p. 103.
82 Radical Cure of Osteomyelitis of Ribs. E. G. Beck, Chicago. —p. 107.
83 Some Painful Affections of Feet. J. L. Porter, Chicago.—p. 110

Iowa State Medical Society Journal, Des Moines

February, VII, No. 2

84 Typhus in Iowa. M. F. Boyd, Iowa City.—p. 45.
85 Conservation of Vision. T. U. McManus, Waterloo.—p. 51.
86 Occlusion of Nasopharynx. F. W. Bailey, Cedar Rapids.—p. 57.
87 Drainage for Empyemic Conditions of Chest. F. E. Bellinger, Council Bluffs.—p. 58.
88 Renal Infections and Their Treatment. A. G. Fleischman, Des Moines.—p. 64.
89 Origin of Psychopathic Hospital. G. H. Hill, Des Moines.— p. 67.
90 Sliding Hernia; Report of Case of Double Sliding Hernia. T. F. Thornton, Waterloo.—p. 71.

Journal of Abnormal Psychology, Boston

December, 1916-January, XI, No. 5

91 World Consciousness and Future Peace. M. Prince, Boston.—p. 287.
92 Is Dementia Praecox Properly Described as Infantile Mode of Reaction? H. D. Singer, Chicago.—p. 305.
93 Case of Psychasthenia. M. Solomon, Chicago.—p. 309.
94 *Unusual Case of Speech Inhibition. S. Blanton, Madison, Wis.—p. 325.
95 Variations in Sensory Threshold for Faradic Stimulation in Psychopathic Subjects. G. P. Grabfield, Boston.—p. 328.

94. **Case of Speech Inhibition.**—The case reported by Blanton was one of a psychoneurosis due to some mental conflict. It was an accentuation of the fear and timidity which many high-strung and neurotic children suffer from when they first leave home for school. The boy's vocal cords and hearing were normal. At home he talked in a good loud tone when he was playing with his brothers. However, when on the playground with other children, he would not speak, even when playing games. At home, he speaks much less than do his brothers. He seems to try to avoid speaking. For example, if he desires something at the table, instead of asking for it, he gets it himself. However, he sometimes sings after he has gone to bed, and then his voice is full-toned and pleasant. He appeared to be suffering from mental conflict resulting in an inhibition of his speech. Blanton points out that this case shows that parents and teachers should not neglect to take notice of cases of excessive timidity in children that prevents them from speaking when in school or with strangers. This excessive fear is due to infantile conflicts and repressions and lack of adjustment, and unless these conditions are removed, a serious neurosis may develop.

Journal-Lancet, Minneapolis

February 1, XXXVII, No. 3

96 *Occurrence of Urobilinogen and Urobilin in Urine of Pregnant and Nonpregnant Women. E. Barnard, Minneapolis.—p. 80.
97 Spontaneous or Nontraumatic Rupture of Left Kidney. G. J. Thomas, Minneapolis.—p. 84.
98 Value of Fundus Examination in General Diagnosis. M. E. Trainor, Williston, N. D.—p. 86.

96. **Urobilinogen and Urobilin in Urine of Pregnant and Nonpregnant Women.**—A total of 1,005 examinations were made by Barnard for urobilin in the urine of 244 women. Of these 160 were pregnant, and eighty-four nonpregnant. Of the pregnant women, 148, or 92.5 per cent., showed urobilinuria at one time or another. Subtracting those in which increased hemocytolysis or liver disease could not be excluded, reduces the number to 115, or 71.9 per cent. Of the nonpregnant

women, 22, or 26.2 per cent., had urobilinuria. Seventeen of these had diseases which might produce changes in the liver or blood cells, leaving five, or 0.2 per cent. In the pregnant, indican was present in eighty-three, or 51.25 per cent., of the cases. In the nonpregnant, indican occurred in twenty-six, or 30.9 per cent. In the pregnant, urobilin and indican were present in seventy-two cases, indican occurring in 48.6 per cent. of the cases in which urobilin was present. In the nonpregnant, urobilin and indican were present in twelve cases, indican occurring in 54.5 per cent. of the cases in which urobilin was present.

Kansas Medical Society Journal, Topeka

February, XVII, No. 2

99 Function of Suprarenal Glands. J. S. Sutcliff, Iola.—p. 31.
100 Industrial Occupation and Recreation Among Insane. B. F. Frazer, Osawatomie.—p. 35.
101 Epidemic of Typhoid at University of Kansas. J. Sundwall, Lawrence.—p. 37.

Laryngoscope, St. Louis

January, XXVII, No. 1

102 Treatment of Frontal Sinus Suppuration. H. A. Lothrop, Boston. —p. 1.
103 Relation of Obstruction of Eustachian Tube to Local and Systemic Conditions and to Prognosis Regarding Restoration of Hearing. C. E. Ide, Los Angeles.—p. 14.
104 Bilateral Polypoid Hemangioma of Nasal Septum. J. G. Callison, New York.—p. 33.
105 Primary Epithelioma of Frontal Sinus; Report of Two Cases. D. S. Dougherty, New York.—p. 37.
106 Hemiplegia Following Tonsillectomy. G. F. Gracey, Plainfield, N. J.—p. 40.
107 Case of Septicemia with Polyarthritis and Pulmonary Infarct Following Tonsillectomy. W. A. Scruton, New York.—p. 43.
108 Diagnosis of Serous Labyrinthitis. H. B. Graham, San Francisco. —p. 46.
109 Nasal Refracture. L. L. Stanley, San Quentin, Calif.—p. 49.
110 Improved Aural Curet. J. A. Hagemann, Pittsburgh.—p. 52.
111 Responsibility and Nonsuccess in Nasopharyngeal Surgery. J. E. Reeder, Sioux City, Iowa.—p. 53.

Medical Record, New York

February 10, XCI, No. 6

112 The Hand in Health and Disease. W. P. Cunningham, New York. —p. 223.
113 Histopathologic Changes in Case of Amyotrophic Lateral Sclerosis. G. B. Hassin, Chicago.—p. 228.
114 Tuberculin Actions and Reactions. P. H. Ringer, Asheville, N. C. —p. 233.
115 Prognosis of Duodenal Ulcer. M. Einhorn, New York.—p. 236.
116 Some of Activities of Medicoliterary Service. E. Preble, New York.—p. 237.
117 Elective Localization of Streptococci from Autotherapeutic Point of View. C. H. Duncan, New York.—p. 329.

Missouri State Medical Association Journal, St. Louis

February, XIV, No. 2

118 Case of Gaucher Type of Splenomegaly with Splenectomy. B. S. Veeder and M. B. Clopton, St. Louis.—p. 49.
119 Medical Service of Life Insurance. S. B. Scholz, Jr., St. Louis. —p. 51.
120 Physical Phenomena in Pleural Effusions. J. C. Lyter, St. Louis. —p. 55.
121 Right Thing at Wrong Time in Vaccine Therapy. W. F. Grinstead, Cairo, Ill.—p. 57.
122 Two-V Flap—Practical Circumcision for Children. E. D. Twyman, Independence.—p. 59.
123 Uncinariasis. A. H. Thornburgh, West Plains.—p. 62.
124 *Vaccination in Smallpox. F. M. Vessells, Perryville.—p. 67.
125 Relation of Laboratory to Practice of Medicine. E. L. Spence, Fulton.—p. 69.
126 Carcinoma of Prostate. E. G. Mark and H. E. McCarthy, Kansas City.—p. 71.

123 and 124. Abstracted in THE JOURNAL, June 24, 1916, p. 2121.

New York Medical Journal

February 10, CV, No. 6

127 Rights of Unborn Child. B. C. Hirst, Philadelphia.—p. 241.
128 Vicious Circle in Oral Sepsis. N. B. Potter, New York.—p. 243.
129 After-Treatment of Anterior Poliomyelitis. H. W. Frauenthal, New York.—p. 247.
130 Treatment of Prostatic Obstruction. H. G. Bugbee, New York.—p. 251.
131 Prompt Removal of Exudate from Trauma. A. B. Hirsh, Philadelphia.—p. 255.
132 Improved Stock Binder for Enteroptotic Men and Children. A. E. Gallant, New York.—p. 257.
133 Birth Control. E. C. Podvin, New York.—p. 258.
134 Injection Method of Treating Hemorrhoids. A. L. Sherman, Newark, N. J.—p. 260.

Northwest Medicine, Seattle

January, XVI, No. 1

135 Fat Dystrophies of Endocrinous Origin. H. G. Beck, Baltimore. —p. 1.
136 Relation of Blood Pressure to Anesthesia. M. V. Madigan, Portland, Ore.—p. 3.
137 Poliomyelitis. E. E. Laubaugh, Boise, Ida.—p. 7.
138 Acute Anterior Poliomyelitis; Report of Cases. J. R. Morrell, Ogden, Utah.—p. 9.
139 Heliotherapy in Skin Lesions; Report of Cases. A. Jordan, Seattle. —p. 12.
140 State's Wards. M. H. Cardwell, Portland, Ore.—p. 16.
141 Writing of Medical Papers. C. A. Smith, Seattle.—p. 20.

Ophthalmic Record, Chicago

February, XXVI, No. 2

142 Iridotasis in Glaucoma. E. Stieren, Pittsburgh.—p. 57.
143 Visual Fields in Pellagra. F. P. Calhoun, Atlanta, Ga.—p. 63.
144 Sudden Obstruction to Retinal Circulation in Case of Cardiorenal Disease. G. O. Ring, Philadelphia.—p. 70.
145 Complete Bilateral Ophthalmoplegia with Choked Disks. E. M. Blake, New Haven, Conn.—p. 74.
146 New Cataract Knife and Knife for Dacryorhinostomy. M. Black, Denver.—p. 77.
147 Campimeter vs. Arc Perimeter. L. C. Peter, Philadelphia.—p. 79.
148 Method of Operation in Complete Obliteration of Anterior Chamber; Report of Case of Corneal Staphyloma. C. G. Darling, Chicago.—p. 83.

Southern Medical Journal, Birmingham

February, X, No. 2

149 Relation of Medical Profession to Medical Preparedness. R. E. Noble, Washington, D. C.—p. 91.
150 *Rôle of Food in Etiology of Cardiovascular Renal Disease. A. Eustis, New Orleans.—p. 96.
151 Syphilis as Factor in Production of Cardiovascular Renal Disease. D. VanderHoof, Richmond, Va.—p. 100.
152 *Simplified Technic in Application of Schick's Reaction for Testing Immunity to Diphtheria. W. Litterer, Nashville, Tenn.—p. 103.
153 Artificial Pneumothorax Plea for Partial Compression. C. M. Hendricks; El Paso, Texas.—p. 107.
154 Report of Committee on Uniformity in Wassermann Reaction. W. Litterer and Others.—p. 110.
155 Evolution Under Way in Public Health Activities. J. A. Ferrell, New York.—p. 116.
156 Importance of Control of Childhood Infection in Crusade for Eradication of Tuberculosis. C. L. Minor, Asheville, N. C. —p. 122.
157 Trachoma; What the Government is Doing to Eradicate and Prevent Its Spread. J. McMullen, Lexington, Ky.—p. 130.
158 Surgery of Chronic Ulcer of Stomach and Duodenum. W. D. Haggard, Nashville, Tenn.—p. 137.
159 *Suction Drainage in Empyema. A. McGlannan, Baltimore.—p. 143.
160 *Meckel's Diverticulum; Umbilical Disorders of Infancy. R. M. Harbin, Rome, Ga.—p. 148.
161 Case of Fracture of Pelvis. D. Z. Dunott, Baltimore.—p. 150.
162 Case of Superfetation Occurring in Uterus Subseptus. W. T. Pride, Memphis, Tenn.—p. 159.
163 Operative Treatment of Chronic Frontal Sinusitis. T. W. Moore, Huntington, W. Va.—p. 161.
164 Laryngeal Diphtheria. J. B. Greene, Asheville, N. C.—p. 164.

150. Abstracted in THE JOURNAL, Dec. 23, 1916, p. 1967.

152. **Schick's Reaction for Testing Immunity to Diphtheria.** —Litterer's method of applying the test requires no special technic that is not easily acquired by any physician. The necessary articles are a 1 c.c. hypodermic syringe graduated in tenths, a No. 26 or 27 gage needle, a vial each of sterile normal salt solution, and diphtheria toxin. All the physician has to do is to pour the salt solution into the vial and shake it. Two tenths of a cubic centimeter of this solution is the proper dose for the test. The injection should be made into the skin (intradermal) and not subcutaneously. This is easily accomplished if a small bit of the skin is held tightly between the thumb and forefinger of one hand and the barrel of the syringe in the other is held lower than the needle point. The reaction, if positive, is shown by an area of inflammation varying in extent from 2 to 5 cm. in diameter. It is more intense in the center and lasts for about ten to fourteen days, when it gradually disappears, leaving a brown desquamating surface. Those giving such reaction, are susceptible to diphtheria while those who do not, have a natural immunity which is adequate to protect them.

159 and 160. Abstracted in THE JOURNAL, Dec. 23, 1916, pp. 1966 and 1967.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

December, 1916, XXXIV, No. 131

1 Art of Medicine in Age of Homer. F. H. Edgeworth.—p. 105.
2 Effect of General Conditions on Quality of Teeth. W. R. Ackland.—p. 118.
3 Some Aspects of British Surgery in France. J. Swain.—p. 128.
4 Medicine and Surgery in Mesopotamia. C. F. Coombs.—p. 136.
5 Ten Months in France with a Field Service Roentgen Ray Outfit. W. Cotton.—p. 144.
6 Operation for Drainage of Sphenoidal Sinus. P. Watson-Williams. —p. 157.

British Medical Journal, London

January 27, I, No. 2926

7 Contractures and Allied Conditions; Their Cause and Treatment. G. Cooper.—p. 109.
8 Diseases of Male Urethra. F. S. Kidd.—p. 114.
9 *Nerve Grafting as Means of Restoring Function in Limbs Paralyzed by Gunshot or Other Injuries. A. W. Mayo-Robson. —p. 117.
10 *Incidence of Tetanus Among Wounded Soldiers. D. Bruce.—p. 118.
11 Three Cases of Tetanus. R. I. Douglas and C. H. Corbett.—p. 119.
12 Sodium Salicylate in Treatment of Trench Feet. W. Gordon. —p. 121.

9. **Nerve Grafting in Paralyzed Limbs.**—A case is cited by Mayo-Robson which shows that in the absence of recently removed nerve, such a structure as the spinal cord of a rabbit may be successfully used as a graft. There had been a complete division of the median, ulnar and internal cutaneous nerves. The internal cutaneous nerve ends were united by a catgut suture. The fibrous tissue between the ends of the ulnar nerve was excised, and the two healthy portions were united by grafting strands of the sciatic nerve of a rabbit so as to fill up the gap and produce continuity. It was quite impossible to bring the divided ends of the median nerve nearer than 2½ inches. All the available nerve tissue having been exhausted in uniting the ulnar nerve. The spinal cord of a rabbit just killed was used as a graft to connect the ends of the median nerve, the inserted cord lying loose and quite free from tension when finally placed in position. Fine catgut sutures were used throughout. Six months after the operation the patient could pick up small objects, and although the grasp was not powerful, it was much improved. The powers of flexion of the wrist and adduction of the thumb were considerably increased, but there was no sensation as yet over the ulnar distribution. Six years after the operation the muscles had almost completely returned to their former volume, and in the hand all the muscles except the abductor of the thumb were as well developed as in the left; this was quite as well marked in the interossei as in the other muscles. The movements of the arm were completely restored and almost as perfect as in the left. Flexion of the fingers and the grasp had completely returned, and the only weak muscle was the abductor of the thumb, which had no perceptible power. Sensation was completely restored. All the muscles of the arm and hand reacted to faradism except the abductor of the thumb.

10. **Tetanus Among Wounded Soldiers.**—The principal object of Bruce's paper is to draw attention to the effect of prophylactic injections of antitetanic serum in lowering the incidence of tetanus among wounded men. The ratio in September, 1914, was 16 per 1,000; in October, 32 per 1,000; and in November it was 2 per 1,000, about which figure it remains until the present date. This remarkably sudden fall is attributed to the introduction of prophylactic injections of antitetanic serum.

Journal of Laryngology, Rhinology and Otology, London

January, XXXII, No. 1

13 Pathology of Congenital Syphilitic Disease of Ear. J. S. Fraser and R. Muir.—p. 8.

Lancet, London

January 27, I, No. 4874

14 *Recent Cases of Tetanus in British Expeditionary Force. W. B. Leishman and A. B. Smallman.—p. 131.
15 Modified Tetanus. H. Burrows.—p. 139.
16 Weil's Disease (Spirochetosis Ictero Hemorrhagica) in British Army in Flanders. A. Stokes, J. A. Ryle and W. H. Tytler. —p. 142.
17 Toxic Jaundice in Munition Workers. M. J. Stewart.—p. 153.

14. **Treatment of Tetanus.**—The authors place the alternative channels of administration of tetanus antitoxin in the following order of merit: intramuscular, subcutaneous, intrathecal and intravenous. The intravenous route should not be used; not only does it introduce a risk of anaphylactic shock, from which other methods are practically free, but it has done little, if any, good in treatment. As to the intrathecal route, the evidence obtained by the authors is pretty strongly against its employment. They feel that the intrathecal route may be a dangerous one and that its theoretical foundations are not as secure as one would like. It formed a part of the treatment in twenty-seven cases in which the patients recovered. The subcutaneous and intramuscular routes are essentially similar in action, each being a comparatively slow and continuous method of dosage as distinguished from the rapid introduction involved in the venous and thecal methods. When these two paths of introduction have been utilized freely, and where the dosage has been sufficient, the results as regards saving life have been more satisfactory than when they were not utilized or were used in altogether too restricted a fashion. Should the wound be a single one, and especially if it is on a limb, the authors believe it would be sound practice to introduce antitoxin, both subcutaneously and intramuscularly, somewhere astride the path which the toxin must travel on its way to the spinal cord. To do this effectually it would appear better to divide the dose and inject portions on each surface of the limb and also at different depths amid the muscles. Somewhere among these tissues run the nerves along which the poison is traveling, and the more evenly distributed the antitoxin the better would appear the chance that it may attain effective contact with the toxin and achieve the desired object. If the combined subcutaneous and intramuscular routes be used, the daily dosage for the first few days should not fall below 10,000 units. If it be desired to supplement this by intrathecal injections, it would appear wise to limit these to such a number of units as could be contained in 10 or 15 c.c.

Medical Journal of Australia, Sydney

December 30, 1916, II, No. 27

18 *Skin Eruption Associated with Presence of Great Numbers of Demodex Folliculorum. H. Lawrence.—p. 555.
19 Left Side Pelvic Pain. J. A. G. Hamilton.—p. 556.
20 Case of Bone Transplantation for Osteitis Fibrosa Cystica; Excision, Transplantation. D. M. Morton.—p. 557.

January 6, I, No. 1

21 Bacilli and Immunity. J. C. Verco.—p. 1.
22 *Fatal Hemorrhagic Dengue. J. A. Goldsmid.—p. 7.
23 Case of Epithelioma Adenoides Cysticum (Brooke). N. Patil. —p. 8.

January 13, No. 2

24 Localization of Foreign Bodies in Eye. J. G. Edwards.—p. 25.
25 Treatment of Intracapsular Fracture of Femur. C. E. Todd. —p. 27.
26 Fibroid Tumor of Broad Ligament. J. A. G. Hamilton.—p. 28.
27 Technic of Rectal Oil-Ether Anesthesia. W. Ray.—p. 29.
28 Resection of Intussusception in Child of Seven Months; Recovery. P. L. Hipsley.—p. 30.
29 Cesarean Section for Eclamptic Convulsions. H. H. Lee.—p. 30.

18. **Skin Eruption and Acarus.**—Lawrence is of the opinion that cases of an impetiginous eruption in adults associated with the presence of great numbers of these parasites have been on the increase. So familiar has the clinical picture become that it is generally possible to predict that great numbers of demodex will be found. These cases have occurred in adults, and resemble an impetigo contagiosa, but there would seem to be some difference from that affection. The lesions have a greater tendency to form rings, and the border of the skin is more definitely raised than in ordinary impetigo contagiosa. The pustulation is not so severe as in impetigo, nor do these cases respond so rapidly to the usual simple antiparasitic remedies as might be expected. Some patients have thought the eruptions followed on shaving, but the

lesions may be situated away from the hairy region, and be found on the forehead, neck, or on the nose. The feature common to all these cases is the extraordinary numbers of the *Demodex folliculorum* which are demonstrable in the most simple scraping from the skin. Five or more may be seen in a microscopic field, and their size varies in quite a remarkable degree, possibly representing successive generations.

22. **Fatal Hemorrhagic Dengue.**—Experience has convinced Goldsmid that jaundice of a moderately severe type is not uncommon, and, in addition to this, he has seen three severe cases of purpuric complications. When seen, two of the children had been ill for five days. They had hematemesis and hemorrhage from the bowels. One was moribund when brought in, and died within twenty-four hours. The other recovered after a tedious illness, with frequent relapses of her fever, though when once thoroughly checked the hemorrhages did not recur. A third case terminated fatally. A man, aged 26 years, had hemorrhagic effusions into the tongue, hands, wrists and forearms. The legs and body were also affected. He had had malaria two or three years before, and had taken large quantities of quinin. There was no history of hemophilia in the family. Dengue had been present in the household of his employer, and May 17, he became ill with pains in the back and limbs, headache and soreness of the eyes on movement. He had slight fever, but did not notice any rash. The condition was evidently dengue. May 23, he was back at work, and noticed that some slight scratches bled very freely and persistently. After a time, small, very dark spots came out on the hands and spread all over the body. Some of the spots became large, and his gums began to bleed. There was no vomiting and no purging. He was "light-headed" for one night. He passed bloody urine. He had taken no drugs except a dose of magnesium sulphate. May 26, the urine contained much more blood. The patient was spitting blood from his mouth continually. May 28, hemorrhage from the nose occurred. The patient vomited blood, and also coughed it up. He complained of pain in his head. The petechiae on the hands were much larger. At 9:15 a. m. he was unconscious, and at 1:45 p. m. he died. A full postmortem report is given.

Quarterly Journal of Medicine, London

October, 1916-January, X, Nos. 37-38

30 Septicemia Due to Micrococcus Tetragenus as Cause of Pyrexia at Front. A. H. Birks, R. T. Thornley and R. A. Fawcus.—p. 1.
31 *Study of Metabolism in Case of Amyotonia Congenita. F. Powis and H. S. Raper.—p. 7.
32 Records of Speech in General Paralysis. E. W. Scripture.—p. 20.
33 *Retinitis of Arteriosclerosis and Its Relation to Renal Retinitis and to Cerebral Vascular Disease. R. F. Moore.—p. 29.
34 Early Stage of Wounds of Chest. W. P. Herringham.—p. 79.
35 Jaundice of Infective Origin. B. Dawson and W. E. Hume.—p. 90.
36 Lipodystrophia Progressiva. F. P. Weber.—p. 131.

31. **Metabolism in Amyotonia Congenita.**—The chief findings obtained by Powis and Raper from a study of one case of amyotonia congenita (associated also with some nutritional disturbance) may be summarized as follows: 1. A diminution of hepatic functional activity as manifested by the presence of acholia. 2. A normal calcium retention associated with a relatively high potassium retention. 3. A low creatinin excretion, and accompanying this a relatively high creatin excretion. 4. Treatment of the case with bile salts or dried ox bile produced some improvement, as manifested by an increase in strength of the muscles, and a change toward the normal in the ratio of the potassium to the calcium retention, the normal values, owing to a lack of other data, being deduced from the ash analyses of young animals.

33. **Retinitis of Arteriosclerosis.**—Of forty-four patients suffering from a gross cerebral vascular lesion, thirty-one (70 per cent.) exhibited evidence of retinal vascular disease, and in 19 of them (43 per cent.) it was severe in degree. Twenty-seven are known to have died and the cause of death has been ascertained in twenty-six instances. Of these twenty-six cases a gross vascular cerebral lesion has been the cause of death in twelve (46 per cent.). Of forty-six patients in whom retinal vascular disease was sufficiently severe to give rise to symptoms, twenty-one (46 per cent.) had either suffered from such a lesion or developed one in the course of about three years.

Archives de Médecine des Enfants, Paris

January, XX, No. 1, pp. 1-56

37 *Prophylaxis of Contagion in Children's Hospitals. (Les conditions d'hospitalisation des enfants.) H. Barbier.—p. 1.
38 *Emetin in Treatment of Subacute or Chronic Follicular Enterocolitis. L. A. Azcoitia (Oviedo).—p. 23.
39 Fulminating Pneumonia of Right Lung in Girl of Five. J. Comby. —p. 25.
40 Addison's Disease in Girl of Thirteen with Necropsy. J. Comby. —p. 28.
41 Infectiousness of Febrile Jaundice. (Maladie de Weil.) J. Comby. —p. 30.

37. **Prophylaxis of Infection in Infant Wards.**—Barbier describes the methods in vogue at the Hérold hospital at Paris to prevent contagion in the infant ward. The latest improvement is to have the nurses wear a veil like the veil worn in the operating room. This adds the finishing touch to the glass box system by preventing the carrying of infection in the hair from one box to another. The little caps worn by nurses are no protection in this line. He expatiates further on the importance of a well trained and experienced set of nurses. The constant necessity for having to break in new nurses for the care of the isolated infants is discouraging. Sterilized folded cloths under the infant's heads have done away with the infections of the head which used to be common. One nurse has charge of the food for all the infants, written directions being given for each. She collects the directions and prepares the food, and this is her entire work, in a room apart. Each wire basket is marked with the number of the bed, and the bottles are thus prepared at 11 a. m. for the twenty-four hours. Infants unable to take cow's milk have thriven on ass's milk, when breast feeding could not be obtained for them. Many of the children in advanced marasmus were thus restored to health in the course of several months. Among the 1,238 infants in the hospital, 1909 to 1913, the mortality was 35 per cent., and 29.5 per cent. of the 442 deaths were from typical tuberculosis, confirmed by necropsy.

He adds that of the 141 deaths among the 311 marasmic infants, 62 per cent. were from septicemia. Only 15.1 per cent. succumbed to the marasmus. These children were in the crèche ward where two or more with or without the mothers, were in each box. All the septicemia infants except about 30 per cent. were under 6 months. In many of them, but not all, hospital contagion was unmistakably responsible. Marasmic children have so little resisting power that their skin and mucous membranes are predisposed to infections of all kinds. Sometimes a series of such cases occurred in the crèche. These experiences have convinced him of the absolute necessity of a separate cubicle for each infant. The infants already infected should be kept entirely separate from the others, and nurses tending the infected ones should never have anything to do with the other marasmic infants. Another feature of which he complains is that there is no provision made for taking convalescent infants and older children out of the hospital atmosphere at the earliest possible moment. He has to keep them on in the hospital. His experiences with measles, whooping cough and typhoid are related in detail. None of the forty-six cases of typhoid terminated fatally, and he ascribes this in large part to the avoidance of milk. No milk is given the typhoid children except in the form of yoghurt. Under this the intestinal symptoms are mild, the tongue is moist, and the general symptoms attenuated.

38. **Emetin in Chronic Follicular Enteritis.**—When the dysenteriform bowel trouble had passed into a subacute or chronic phase, rebellious to other measures, Azcoitia found emetin effectual. In the four children over a year old there were no signs of intolerance, and convalescence was well under way by the twelfth day in all under the daily small doses by subcutaneous injection. He does not venture to explain the action of the emetin in these cases, as there was no question of the ameba being involved.

Paris Médical

January 20, VII, No. 3, pp. 54-68

42 *Syphilis after Two Years of War. Gaucher and Bizard.—p. 54.
43 *Typhoid Bacilli in the Bile from the Duodenum. (La biliculture chez les typhiques.) M. Labbé and G. Canat.—p. 57.
44 Walking Devices after Injury of the Leg. (Appareils de marche avec étrier de décharge pour diverses lésions du membre inférieur.) J. Regnault.—p. 59.
45 *Patch of Anesthesia on the Chin as Sign of Fracture of Lower Jaw. (Sur un signe peu connu des fractures du maxillaire inférieur.) L. Imbert and L. Gauthier.—p. 65.
46 Various Manifestations of Fatigue in Soldiers on Active Duty. (Quelques formes de la fatigue à l'avant.) M. Lelong.—p. 66.

42. **Syphilis After Two Years of War.**—Gaucher's address was summarized in these columns Feb. 10, p. 492.

43. **Typhoid Bacilli in Bile from Duodenum.**—The bile was obtained with the duodenal catheter or with the stomach tube an hour after injection of oil. The tests were made on thirty-five typhoid or paratyphoid patients at various stages of their disease. The findings are tabulated. The bacilli found in the bile were always of the same species as those found in the patient's blood or stools or both. The findings were positive in the bile in 43 per cent. but only in 36 per cent. in the stools, and there was no simultaneous parallelism between the two. It is possible that the typhoid bacilli get killed off before they reach the rectum. In one case the blood seemed to be sterile as also the stools, and serodiagnosis tests were negative, but the symptoms suggested typhoid, and twelve days after defervescence bile from the duodenum disclosed paratyphoid B bacilli.

45. **Localized Anesthesia as Sign of Fracture of Lower Jaw.**—Imbert gives an illustration of the round patch on the chin and lower lip, close to the median line, which he has found constantly anesthetic with fracture of the lower jaw. The patch is over an inch in diameter, being the region innervated by the end branch of the inferior dental nerve.

Presse Médicale, Paris

January 18, XXV, No. 4, pp. 33-40

47 Toxicity of Emetin Hydrochlorid. (Toxicité du chlorhydrate d'emétine.) R. Dalimier.—p. 33.
48 Repairing the Lower Jaw after War Wounds. Pierre-Robin.—p. 35.

47. **Toxicity of Emetin.**—Dalimier tabulates the findings with tentative doses of emetin hydrochlorid in rabbits and guinea-pigs, which established as the toxic dose per kilogram of body weight 0.002 gm. by intravenous injection and 0.03 gm. subcutaneously for the rabbit, and 0.007 and 0.09 gm., respectively, for the guinea-pig. He used a 2 per cent. solution of emetin hydrochlorid for his tests. Maurel has reported similar research on vertebrates but he found the toxic dose much larger than those obtained by Dalimier. The latter repeated Maurel's experiments and the animals died before he had even reached Maurel's dose claimed to be merely toxic.

Applying to man the figures obtained on animals, Dalimier computes the dose which would induce symptoms of toxic action in a man weighing 60 kg. as 0.12 gm. by intravenous injection, and 1.8 gm. by subcutaneous injection. The maximal safe dose would be 0.06 by intravenous injection and 1.2 by subcutaneous injection. Of course, he admits, it is incorrect to apply directly to man the results of experimental research, but the two cases of intoxication from emetin which he has found on record showed a surprising harmony in respect to the doses followed by symptoms of intoxication. The first was published by Spehl and Colard of Brussels. A man of 28 was given a subcutaneous injection of 0.03 gm. of emetin hydrochlorid in a 3 per cent. solution twice daily for six days and then three times daily for twelve days, the total administered being thus 1.44 gm. in eighteen days. When this total was reached there was first flaccid paralysis of all the musculature, most pronounced in the neck, so he could not hold his head up. Then came disturbances in swallowing, chewing and speech, followed by edema of the face, attenuation of the reflexes and rapid and weak heart action, with reduction of the urea and chlorid content of the urine. Paralysis of the respiratory muscles was feared but did not develop, and on suppression of the drug and treatment with tannin, camphorated oil, diuretics, etc., the toxic phenomena subsided. By the twentieth day nothing was left of the symptoms of intoxication except a certain weakness of some muscles.

In Lagane's case the patient was given 0.08 gm. of the emetin by subcutaneous injection for fourteen days, a total of 1.12 gm. in the two weeks. The blood pressure then was found abnormally low with weakness of the heart contractions.

In Dalimier's experimental work the corresponding toxic dose for the rabbit might be calculated at 1.8 gm. and the dose tolerated 1.2 gm. In Lagane's case the toxic dose proved to be 1.12 and in Spehl's case 1.44. Lagane's patient had not reached the actual toxic dose and the drug was stopped in time to avert trouble, but Spehl's patient had passed the danger mark. The harmony between the experimental and the clinical experiences related is the more remarkable as the animals were given the whole dose practically at once while in the clinical cases it was spread over two weeks and more. This suggests, Dalimier remarks, that emetin has a cumulative action. The total dose of 1 gm. of the emetin seems to be the limit of safety. He is convinced that in certain cases of dysentery in which emetin has been given, some of the symptoms that have been ascribed to the disease were in fact the work of the emetin.

Berliner klinische Wochenschrift

December 18, 1916, LIII, No. 51, pp. 1357-1380

49 *Improved Technic for Detection of Occult Blood. (Neue Beiträge zur Methodik des okkulten Blutnachweises.) I. Boas.—p. 1357.
50 Gastrohydrorrhea in Cirrhosis of the Liver Accompanied by Pyloric Stenosis. M. Einhorn (New York).—p. 1361.
51 *Myasthenic Bulbar Paralysis in Two Chronic Diphtheria Bacilli Carriers. M. Gerson.—p. 1364.
52 Sugar Preparation as Substitute for Glycerin. (Mollphorus als Glycerinersatz.) Meirowsky.—p. 1366.
53 Therapeutic Influencing of the Metabolic Disturbances in Rachitis. (Ueber Rachitis. IV.) E. Schloss.—p. 1366.

49. **Improved Technic for Detection of Occult Blood.**—Boas says that all efforts to detect hemin crystals in the excreta have proved futile when it is a question of invisible blood, while spectroscopic examination requires skill and an equipment which not all practitioners possess. This restricts us, he continues, to the catalytic methods of examination, and benzidin and phenolphthalein are such excellent catalyzers that when the findings with both are negative the absence of blood is practically certain. They are both so sensitive, however, that a positive reaction may be obtained even in certainly nonpathologic cases. Boiling the extract of feces does not alter the findings. The question is now what substances, besides blood, are able to induce the reaction. Schumm's modification of the guaiac test is reliable as he removes pigments, fats and all the organic and inorganic catalyzers before applying the guaiac technic. But this requires such quantities of the alcohol-ether and takes so much time that it can never become a routine procedure. The trouble with the usual guaiac test is that the chemicals hitherto used to make the extract of the feces do not dissolve out all the blood in them, but chloral hydrate, in a 70 per cent. alcoholic or ethereal solution, has proved in Boas' research an ideal means for extracting the hematin of the feces. When chloral is used, the guaiac test may give positive findings when the reaction is negative with all other technics except Schumm's, while the procedure is simple and requires only a few minutes. For the stomach content he prefers the usual guaiac technic, merely neutralizing the stomach content with sodium carbonate. This is sufficiently exact for stomach content. He has also confirmed that thymolphthalein can serve to reveal occult blood and is very useful to control other tests. It is used for the blood test in the same way as the phenolphthalein technic, both for feces and stomach content. By applying both the chloral and the thymolphthalin technics, to control each other, much better insight can be obtained in dubious cases.

He rubs up the piece of feces the size of a bean or cherry, with 5 or 10 c.c. of a 70 per cent. solution of chloral hydrate in 96 per cent. alcohol, and adds 20 drops of glacial acetic acid, blending the whole thoroughly. Then he dissolves in 2 c.c. of the chloral solution as much pulverized gum guaiac

as he can take up on the tip of a spatula; adds 20 or 25 drops of 3 per cent. hydrogen dioxid and shakes vigorously. The chloral extract of fecal material is then slowly filtered into this mixture of guaiac and H_2O_2. In the presence of blood the upper layer soon turns blue, but this blue tint is transient. It is not necessary to shake the fluid.

For the thymolphthalin test he rubs a scrap of feces as large as a cherry with 5 or 10 gm. alcohol and 10 drops glacial acetic acid, and sets it aside for a short time. Then 20 drops of the thymolphthalin reagent are mixed with 15 drops of 3 per cent. hydrogen dioxid. Then 25 or 30 drops of the feces extract are filtered into the reagent. On shaking up the whole, a grayish blue opaque precipitate is thrown down which in a few seconds, on the floor of the test tube, shows first a violet and then an increasing blue tint which, if there is much blood present, soon spreads throughout all the fluid. The blue tint persists for hours or even days. In the absence of blood the precipitate is colorless or a grayish white. With stomach content the test is applied to 5 c.c. of the well mixed stomach content first mixed with 10 drops of 10 per cent. sodium carbonate solution and then 10 drops of glacial acetic acid are added. After waiting to allow the carbon dioxid to escape, then an equal volume of alcohol is added, the whole well shaken several times and filtered. Then 15 or 20 drops of the filtrate are added to the reagent. In the presence of blood there is a distinct zone reaction; on shaking, a more or less pronounced blue tint. There is no change of tint unless there is blood present.

As thymolphthalin is not to be procured at present, he produces it by dissolving 1 gm. thymolphthalein and 25 gm. potassium hydroxid in 100 gm. water and adding 10 gm. zinc powder. The blue fluid resulting is boiled over a small flame, constantly stirring or shaking until completely decolored. It is then filtered hot and brought up to the original volume with distilled water. Zinc filings are then placed in the solution to a height of 0.5 cm. Thus prepared the reagent will keep for weeks. The colorless thymolphthalin becomes transformed back into blue thymolphthalein in the presence of oxidizing substances, such as that in the occult blood with the catalyzer hydrogen dioxid.

51. **Myasthenic Bulbar Paralysis.**—Gerson reports two cases, both in chronic diphtheria bacilli carriers, and he calls attention to this coincidence as possibly explaining the etiology of the affection. The prolonged chronic action of the diphtheria toxins seems to have been responsible for the peculiar course of the myasthenic paralysis which increased and became abated in waves, the whole forming a mitigated form of a chronic toxic paralysis rising and falling with the waves of toxin production. During the two or three months to date in his cases there has been no change in the condition. The symptoms were first noted two or three years ago. There was a history of diphtheria nine years before in one case but none in the other, although both the young patients had been subject to infectious sore throat.

Deutsche medizinische Wochenschrift, Berlin

December 21, 1916, XLII, No. 51, pp. 1565-1596

54 *Treatment of Continuous Vomiting. (Behandlung des bedrohlichen Erbrechens.) J. A. Grober.—p. 1565.
55 *Traumatic Neuroses. H. Oppenheim.—p. 1567.
56 *Agglutination of Proteus in Diagnosis of Typhus; the Weil-Felix Reaction. (Weil-Felixsche Reaktion beim Fleckfieber.) Dietrich.—p. 1570.
57 Tubercle Bacilli Fat as Antigen. (Antigene Eigenschaften der Tuberkelbazillenfette.) M. Bürger and B. Möllers.—p. 1573.
58 *Incision in Occiput and Puncture of Lateral Ventricle to Drain in Meningitis and Chronic Suppuration and Hydrocephalus. M. Westenhöfer and R. Mühsam.—p. 1574.
59 *The Wassermann Reaction with Cancer. (Zur Frage der Spezifizität der Wassermannschen Reaktion: Tumor- und Narkosensera.) E. Sonntag.—p. 1577.
60 Interdigital Mycosis. (Hartnäckige Pilzerkrankung der Interdigitalräume mit familiärer Uebertragung.) E. Hoffmann.—p. 1579.
61 *Dakin's Solution in Treatment of Wounds. (Zur Wundbehandlung mit Dakinscher Lösung. Physiologische Antisepsis.) O. Hirschberg.—p. 1581.
62 *Dangers from Inadequately Treated Syphilis under Salvarsan. W. Lüth.—p. 1582.
63 The Blood Findings in Tetanus. Arneth.—p. 1585.
64 *Treatment of Purpura and Hemophilia. R. Klinger.—p. 1585.

54. **Treatment of Severe Vomiting.**—Grober describes three cases of continuous vomiting which illustrate the variety of causes liable to keep up the vomiting. Removal of the cause is the main thing, but in the meantime the quiet and warmth of the bed are always useful and the patient belongs in bed, with extra heat applied to the stomach region with something light, a woolen cloth, fur, or a flat sack with hay, using nothing heavy. No food or drink should be allowed by the mouth for at least twenty-four hours. Thirst should be relieved by way of the rectum. Later, scraps of ice can be taken in the mouth; as they melt the fluid must be expelled, not swallowed. Patients usually fail to do this, so it is safer to refrain from the ice. Changes of position should be avoided, even for examination; the patient should keep absolutely still. Sedatives can be given by the rectum; he has found 2 or 2.5 gm. chloral in 30 c.c. water very useful, as also codein suppositories. When the sedative can be given by the mouth, he has found most excellent a solution of 1 gm. menthol in 100 c.c. water with 20 or 30 c.c. brandy, giving a teaspoonful three or four times a day, especially when there is much exhaustion. A few drops of chloroform on a scrap of ice may prove useful. Potassium bromid may be indicated when the patient is very restless, or in case of hysteria or pregnancy. If the vagus system seems particularly involved, suppositories made with 0.02 or 0.03 gm. extract of belladonna sometimes give relief. Morphin or its equivalent ensures the needed rest for patient and family and rests the stomach, but it is dangerous if there is a tendency to collapse. In conclusion Grober warns that household remedies may have been taken which directly promote the vomiting, and this should always be enquired into. Worry and physical exhaustion may bring on continuous vomiting; in one of the cases described uremia was responsible for it, the system trying thus to throw off the toxins. Venesection is indicated here, with lumbar puncture and tapping. In another case the vomiting was traced to compression of the vagus center by a cerebral tumor. In a third case hysteria was responsible; the woman looked rosy and well nourished and only part of the food ingested was vomited up. Suggestion and some bitter tincture by the mouth were indicated here.

55. **Traumatic Neuroses.**—Oppenheim's views were summarized in the Berlin Letter, Feb. 24, 1917, p. 647.

56. **The Weil-Felix Reaction in Typhus.**—Dietrich's experiences with eighty-one typhus patients have confirmed the constancy of agglutination of a certain strain of proteus bacilli by typhus serum. Agglutination was characteristic in every case, and constantly negative in the controls.

58. **Incision in Occiput and Puncture of Lateral Ventricle for Drainage.**—Westenhöfer and Mühsam give an illustration to show the extremely simple technic and the advantage of this procedure in treatment of meningitis, suppurative processes in the brain and hydrocephalus. Evacuation of fluid in the subarachnoid space is ensured by an opening into the lowest part of the lateral ventricle, with or without a counter opening in the occipital region. The site for the operation is about the same as for gasserectomy. A hole is drilled in the temporal bone about 1 cm. above the junction of the malar process with the temporal bone. The trocar is inserted not deeper than 3 cm. in children and 4 cm. in adults. A metal retention drain can be introduced and the skin sutured over it. The puncture has been applied in three cases reported in detail. The first patient was a girl of 17 with an acute encephalomyelitis with various complications. Improvement followed puncture of the lateral ventricle releasing 15 c.c. of fluid, and the patient recovered completely except that the right arm is still weak. The other patients were suffering from hydrocephalus left by meningitis, and the puncture of the lateral ventricle, while it relieved, was unable to arrest the advanced process and both patients died. Necropsy showed hemorrhage in one case for which the puncture may have been responsible.

59. **The Wassermann Test with Cancer.**—Sonntag reviews the literature on this subject and his own experience. In 125 cases of cancer he obtained a positive reaction only in two cases, and in both of these necropsy revealed syphilitic lesions

in addition to the malignant disease. Cancer thus in itself does not induce a positive Wassermann reaction as some have maintained.

61. **Dakin's Solution in Treatment of Wounds.**—Hirschberg reports success in treatment of the wounded according to the Carrel-Dakin technic. He says it conforms to the principles of lymph lavage, cytophylaxis and physiologic antisepsis in general, but adds that now that this field of physiologic antisepsis has been opened up, it may be possible to find still more effectual means in this line.

62. **Inadequate Salvarsan Treatment of Syphilis.**—Lüth remarks that tertiary manifestations of syphilis are being encountered now of a severer character than before the days of salvarsan. The latter is not responsible for this, but the fact that the course of treatment was inadequate. He explains why inadequate salvarsan treatment entails more serious results than inadequate mercurial treatment, saying that insufficient doses of salvarsan, too small to destroy the spirochetes, actually breed a strain of more resistant spirochetes, according to the biologic laws of immunology. The patient is thus worse off than if he had been given no treatment at all. The spirochetes are more resistant and more virulent, and thus conditions for their attacking the nervous system are rendered more favorable. In the meanwhile the patient has been losing strength and may not then be able to produce antibodies enough to give a positive Wassermann reaction. The danger of breeding an extraresistant strain of spirochetes, by inadequate salvarsan treatment, is materially reduced when mercury is given with it from the beginning. He makes a practice of this, as he describes in detail. There is no doubt, he adds, that insufficiently treated syphilis runs a much severer course under salvarsan than in the old days of mercury alone. He warns further that treatment with salvarsan requires specialist skill and experience, guided by the blood findings and the entire course of the disease and the results of treatment, possibly calling on the neurologist and ophthalmologist, if we are to ward off indescribable misery from the present and the next generation.

64. **Blood-Platelet Extract by the Mouth Does Not Affect Coagulating Time of Blood.**—Klinger declares that it is practically impossible to influence the coagulating time of the blood by any substances ingested. With hemorrhage in the stomach or bowel, gelatin may aid in arresting hemorrhage by its direct contact with the bleeding substance. With severe and recurring hemorrhages in purpura and hemophilia it is better not to waste time with such measures but resort at once to transfusion of 50 or 150 c.c. of blood.

Medizinische Klinik, Berlin

December 24, 1916, XII, No. 52, pp. 1355-1384

65 Nature and Treatment of War Neuroses. (Wesen und Behandlung der Kriegsneurosen.) R. Wollenberg.—p. 1355.
66 *Advantages of Massage and Exercise in Treatment of Gout, both During and Between Attacks. (Mechanotherapie bei Gicht.) F. Kirchberg.—p. 1358.
67 *Clinical Diagnosis of Contracted Kidney. (Zur klinischen Diagnose der Schrumpfniere.) F. Munk.—p. 1360. Commenced in No. 51, p. 1341.
68 Impact of Two Bullets in the Tissues. (Merkwürdiger Geschossbefund.) Küll.—p. 1364.
69 Unreliability of Dungern Technic for the Wassermann Test. (Ueber die Brauchbarkeit der v. Dungernschen vereinfachten Methode der Wassermannschen Reaktion für die Syphilisdiagnostik.) E. Sonntag.—p. 1365.
70 *To Remove Drug Stains from Skin and Linen. (Entfernung von durch Arzneistoffe verursachten Flecken an der Haut und an der Wäsche.) O. Mankiewicz.—p. 1370.

66. **Massage and Exercise in Treatment of Gout.**—Kirchberg is chief of the Berlin Ambulatorium für Massage, and he advocates both local and general massage as a potent factor in treating and, above all, in warding off gouty attacks. He says that even with podagra the pain from local massage is not enough to prevent the application of this beneficial measure. Even sensitive women bear it well. His course of treatment includes colchicin, hyperemia from intensive application of heat, and the massage. He has found mechanotherapy very useful also for tophi, his assumption being that they are deposited where the circulation of blood and lymph is most sluggish, and hence, while massaging the whole body, he pays special attention to these points. Everything that tends to make the movements of the body juices more active reduces the tendency to manifestations of gout. Superheated air and massage were found particularly useful for gouty eczema. He advises this on the slightest suspicion of gout as a factor in eczema. The relief from itching under the superheated air seems to be constant. Measures to induce sweating are beneficial in gout, as the skin is usually dry and signs of disturbance in the capillary circulation are frequent. Members of gouty families are liable to present this inherited weakness of the skin functioning, especially of the musculature of the capillaries in the skin. This can be regarded as an early symptom of gout, and it calls for prompt training of the skin. Massage increases the ability to sweat and thus renders the gouty better able to take part in sports, a most desirable thing for them.

67. **Contracted Kidney.**—Munk discusses the possibility of differentiating pure hypertrophy of the heart from that with contracted kidney, and the present status of our knowledge as to the causes of hypertonia. He asserts that to assume a contracted kidney from a certain stage of arterial hypertension and hypertrophy of the heart is a mistake in many cases; in certain others it is premature. In three cases reported in detail the clinical diagnosis of contracted kidney was not confirmed by necropsy. The kidneys were practically intact, but the suprarenals were the seat of a tumor. This had evidently entailed hyperfunction of the chromaffin substance, with epinephrinemia. This had induced hypertrophy of the heart, the clinical picture being that of a "chronic nephritis." Munk examined the suprarenals in over 100 cases of chronic nephritis, and found the cortical substance inclined to hyperplasia, especially of the normal fat zone. The findings resembled those in guinea-pig suprarenals after treatment with ovarian substance.

Study of the kidneys of all the cadavers during a recent year at the pathologic institute of the Charité at Berlin showed that in many cases of supposed chronic kidney disease the kidneys were very little, if at all affected, or only secondarily to the hypertrophy of the heart. These were the cases in which the general symptoms, especially the heart disturbances preceded all symptoms on the part of the kidneys. The heart is hypertrophied, the blood pressure 200 mm. mercury or more, but there are no evidences of arteriosclerosis, and albumin or tube-casts are not found in the urine. In one such case in a man of 47 the diagnosis of contracted kidney was changed three years later to myocarditis, and a year later back to contracted kidney. Necropsy showed but slight changes and these only secondary in the kidneys, but there was considerable arteriosclerosis in the brain and coronary vessels. This and two other typical cases are reported in detail out of Munk's extensive experience in this line, all tending to prove that we have as yet no convincing proof that arterial hypertension is the consequence of anatomic changes in the kidneys. The data presented confirm the assumption that the high pressure and even to a certain degree the hypertrophy of the heart are the primary anomaly. This may entail secondarily the sclerosis of the fine blood vessels in the kidneys, Gull and Sutton's arteriocapillary fibrosis. And this may occur alone; in the late stages it may be accompanied by inflammatory or degenerative processes.

Munk refers to recent communications from Umber's clinic (summarized in these columns, February 3, p. 406), which make a similar distinction, but they go only halfway with him, he says. They cling to the kidneys as responsible for the clinical picture, admitting a benign and a malignant form instead of, with Munk, leaving the kidneys out of consideration altogether as not involved, or only secondarily, in the cases with primary hypertension and hypertrophy of the heart. The earliest phase corresponds to an essential hypertrophy of the heart, but this term is no longer used as the kidneys are held responsible; by the time the second phase is reached, the diagnosis of myocarditis is made.

Daily examination of the urine sediment with the polarization microscope is the most reliable means for detecting the earliest involvement of the kidneys. The discovery of highly

refractive bodies, leukocytes with anisotropic properties, and double refractive lipoids points to degenerative processes. This method of examination is more instructive for the purpose than any of the functional tests, he declares. It confirms that the condition and behavior of the heart and the rest of the vascular system have a decisive influence on the quantitative elimination through the kidneys and its duration, in the same way as other purely individual factors beyond our control which may affect the test elimination of an alien substance. The tests for the elimination of fluids and of the concentration power of the kidneys, and the effect of a regular mode of life on the behavior of the kidneys—these give really instructive insight into conditions in the kidneys. Determination of the residual nitrogen in the blood gives almost decisive information as to any insufficiency on the part of the kidneys. Tests with salt and urea are of lesser import. In any event, functional tests of the kidneys should be preceded by a few days of rest or administration of digitalis, with daily weighings, in order to eliminate the heart factors as much as possible.

70. **To Remove Drug Stains from Skin and Linen.**—Mankiewicz mentions, for iodin, moistening with ammonium or sodium thiosulphate. For silver nitrate, washing with a 10 per cent. solution of potassium cyanid or 10 per cent. potassium iodid. The yellow silver iodid spots are removed with sulphurous acid. He says that 10 parts each of mercuric chlorid and ammonium chlorid in 80 parts water will clear the skin of silver nitrate spots. For chrysarobin, rub with benzol (benzene). For resorcin, weak citric acid. For picric acid, leave the spot in contact with potassium sulphate for one minute then wash with abundance of soap and water. Or apply a paste of magnesium carbonate in water to the spot and after a time rub it off. Old pyrogallol spots cannot be removed. More recent spots can be treated by warming in contact with a 10 per cent. solution of iron sulphate until it turns a bluish black; then apply water freely and afterward a solution of an oxalate, rinsing abundantly. The procedure has to be repeated. For coal tar colors, spirit of soap.

Therapeutische Monatshefte, Berlin

December, 1916, XXX, No. 12, pp. 561-604

71 The Declining Birth Rate and Quack Abortifacients. (Geburtenrückgang und Kurpfuscherei.) Kantor.—p. 561. Conclusion.

72 *Digitalis and Water as Diuretics. (Ueber Diurese und Diuretika I.) L. Lichtwitz and G. Zachariae.—p. 568.

73 *Treatment of Certain Gastro-Intestinal Disturbances in Children. (Therapeutische Vorschläge aus dem Gebiete der Kinderheilkunde.) F. Göppert.—p. 574.

74 *Sugar as Dressing for Wounds. (Ueber Wundbehandlung mit Zucker.) G. Magnus.—p. 578.

75 *Heat in Treatment of Gonorrheal Vulvovaginitis in Little Girls. (Ueber die "Fieberbehandlung" der Vulvovaginitis gonorrhoica bei kleinen Mädchen.) A. Ylppö.—p. 580.

72. **Diuresis and Diuretics.**—Lichtwitz and Zachariae tabulate the urine findings in eighteen cases of various kidney affections tested with ingestion of urea, salt or merely water, or all in turn. Of course these can serve as diuretics only when the kidney is capable of eliminating them. The elimination of water is not a mere passive process, they reiterate, but requires active work on the part of the kidneys. The separation of water from the blood serum is more than a simple filtering. Hence when it is necessary to spare pathologic kidneys, ingestion of water is by no means an indifferent matter. When given for diuretic purposes, the amounts, frequency and duration of the water giving should be carefully supervised. Persons with dropsy and those with sclerosis of the kidneys should not be given courses of water drinking. They are adapted more for cases of postacute and chronic nephritis, but a test ingestion of ¾ liter water should always precede it to determine the water-eliminating power of the kidneys. It is most useful in the phase of polyuria following an attack of acute nephritis with edema. Determination of the specific gravity of the urine generally affords sufficient insight into the action of the water drinking on the elimination of the other elements of the urine. Whether mineral or plain water is best in the individual case can be ascertained only by trial. Of all the available tests of kidney functioning, the test ingestion of ¾ liter of water is most instructive as it gives insight into one of the most important functions of the kidneys, while it can be applied anywhere and by any one. The findings are more instructive than slight fluctuations in the albumin content of the urine, and more instructive than the results of most of the newer functional tests.

73. **Treatment of Vomiting of Sick Infants.**—Göppert refers to the vomiting which keeps up even on restriction to tea in severe gastro-intestinal trouble. He has found it possible to arrest this vomiting by pouring into the stomach through a tube 200 c.c. or more of a hot salt solution. He introduces the tube through the nose and has the fluid at a temperature of 39 or 40 C. (102.2 or 104 F.). The children need the fluid, and often a marked change for the better is noted in fifteen or thirty minutes after the intake of fluid, especially in summer, even if there is no vomiting at the time. The benefit excludes the really malignant type. He supplements this intake of hot saline with irrigation of the rectum, the fluid heated likewise to 38 or 39. The flushing of the bowel can be done with 2 or 3 liters of hot Russian tea. In case of serious intoxication, the stomach has to be reserved for its true task, the digesting every two hours of 5 c.c. of breast milk, albumin milk, buttermilk or whey. These small amounts must be given undiluted, and at most a very little water (not tea) given with them. The needed fluid is given by the drop method in the rectum. The Ringer solution for the purpose can be made with a heaping teaspoonful of salt to a liter of water with from four to ten tablespoonfuls of lime water. In emergencies 100 gm. of this solution can be injected every four hours into the rectum.

73. **Treatment of Collapse with Cyanosis in the Newly Born.**—Healthy babes in the first week of life sometimes present a sudden serious condition of collapse with cyanosis. The night before the child did not nurse much, and the hastily summoned physician finds it gasping for breath, as with acute bronchitis or bronchopneumonia, without a cough. Acute sepsis may likewise present a similar picture. Before assuming either of these conditions, however, Göppert insists that the child should be given 100 or 150 gm. tea to drink. Within an hour it seems to be quite well again when the trouble was due merely to drying out of the system from lack of water, which is often responsible for it. The balance of water is very unstable in young breast-fed babies, and reluctance to take the breast even for one night or day may entail such a deficit in the normal fluid balance that severe disturbances with cyanosis and collapse are liable to follow, even in quite healthy children, and prove a serious aggravation of existing pathologic conditions. The recognition and correction of this "thirst damage" may save the infant's life in some cases.

73. **Periodical Vomiting in Children.**—Göppert affirms that it is in our power to arrest at once this periodical vomiting with the odor of acetone in the breath and acetonuria. All that is necessary is to distend the stomach with warm water. He gives the child 250 or 300 gm. of warmed mineral water, Carlsbad or an alkaline-saline carbonated water. The addition of sugar may induce the child to take it more readily. The child must be urged to refrain from vomiting the ingested fluid. As soon as the stomach gets distended, the tendency to vomiting stops at once. The rinsing of the fluid out of the stomach perpetuates the benefit. A liter or two of hot tea injected into the rectum and retained may likewise answer the purpose.

73. **Acute Insufficiency of the Stomach in Infants.**—Göppert refers to the stomach disturbances liable to develop in children between 6 and 12 months old who have been debilitated by chronic intestinal trouble or recurring acute trouble of this kind. The infant loses its appetite and may vomit a few times, and if the derangement is not promptly corrected, dangerous collapse may ensue. He rinses out the stomach and leaves 100 or 150 c.c. of the rinsing fluid, preferably some alkaline-saline mineral water, and gives merely minute amounts of water for eight or twelve hours, and then gives every three hours 30 gm. buttermilk with 1 or 2 per cent. flour, or the same amount of whey alone twice in the twenty-four hours. He increases the amount of buttermilk by 100 or 150

c.c. a day until he is giving 0.5 liter. As soon as 700 c.c. is reached, he reduces the number of feedings to six and gives instead of the buttermilk at noon a strained vegetable broth or gruel. By the end of the sixth week ordinary milk mixtures can be resumed, not going over 500 or 600 c.c. as the maximum of milk. Whey can be used instead of buttermilk, commencing with seven feedings of 60 c.c. whey, increasing to 70 c.c. whey and 40 c.c. gruel, and gradually reaching 500 c.c. whey and 200 c.c. gruel (for the older infants) and then substituting 50 c.c. milk for the same amount of whey. This acute gastric insufficiency of children with chronic bowel trouble does not get the attention in time which it deserves, and too often is allowed to progress into an almost irreparable condition.

74. **Sugar as Dressing for Wounds.**—Magnus admits the value of sugar in warding off fermentations and sterilizing the wound, but thinks that its chief value for treatment of wounds lies in the powerful osmosis which it sets up. The osmotic current floods the wound with secretions and thus self-cleanses it in the most healing-producing way. But this lasts only until the sugar has been so diluted with the secretions that the physiologic point has been reached, and the osmotic tension has been equalized. Market sugar was found sterile in 89 per cent. of a number of bacteriologic tests made with it, and no germs except ordinary saprophytes were found in any of the samples. It is possible, however, that resistant spores might retain their vitality in market sugar if they got into it. He strews the cleansed and dried wound with a thick layer of sugar and applies a dry dressing over this, renewing the dressing daily. Another great advantage of the sugar dressing is that the dressing never sticks to the wound. The powerful secretion flushes out the depths of the wound, and the profuse suppuration softens and aids in casting off all crusts, necrotic tissues, etc., giving a chance for healthy granulation below. When this stage is reached, salves or transplantation supersede the sugar treatment.

75. **"Fever Treatment" of Gonorrheal Vulvovaginitis.**—Ylppö describes in detail the case of a child nearly 5, previously healthy, who had recently grown thin and weak, with a profuse discharge from the vagina. Gonococci were found in smears from vagina and rectum. Then treatment with heat was begun. The child was placed in a bathtub with water at 102 F. and then hotter water was poured in until the temperature of the water was 41 or 42 C. (105 or 107 F.). The water at first reached only to the umbilicus, but later to the nipples. The bath was an hour long each time, and toward the end the temperature in the child's axilla approximated that of the water. No change was apparent for five days, but then the secretion became much less and had ceased entirely by the end of the eighth day and no gonococci could be detected, but the baths were kept up during a second week. The child at first was excited and restless and the pulse ran up to 200 by the end of the hour, but later the child grew more tranquil and sat quieter; sometimes there was slight irregularity of the pulse. After the bath she seemed exhausted and slept for an hour, but on waking she seemed refreshed and was hungry. The weight increased during the two weeks from 11,500 to 12,300 gm. Ylppö will continue this "fever treatment" in suitable cases although aware that this method of treating may be fraught with certain dangers, especially for spasmophilic children who are prone to convulsions, to say nothing of the possibility of collapse in case of disease of the circulatory or respiratory apparatus.

Riforma Medica, Naples

1916, XXXII, No. 42, pp. 1145-1172

76 Action of Toxins of Fatigue on the Circulatory Apparatus. (L'azione delle tossine della fatica sull'apparecchio circolatorio.) L. Ferrannini and S. Fichera.—p. 1145. Commenced in No. 41, p. 1117.

77 *Rapid Staining Method for Organic Fluids, Especially for Blood. (Un nuovo metodo pratico per la colorazione rapida del sangue, suoi parassiti e sedimenti cellulari di altri liquidi organici.) A. Martiri.—p. 1158.

No. 43, pp. 1173-1200

78 Oxaluria is not a Derangement of the Metabolism. (L'ossaluria non e una malattia del ricambio materiale.) E. U. Fittipaldi.—p. 1173.

79 Etiology of Smallpox, Measles and Scarlet Fever. (Vaiolo-Morbillo-Scarlatina.) R. Campana.—p. 1178.

80 Alcoholism in Italy. L. Bianchi.—p. 1191.

81 Zinc Chlorid in Treatment of Carbuncle. (Un' antica cura del favo.) S. Marmo.—p. 1195.

77. **Staining Technic for Body Fluids and Their Sediments.**—Martiri treats the specimen first with an acid and then with a basic stain, without rinsing. Both the reagents are durable and the findings are reliable, he says, even with quite old specimens. The first reagent is a 0.20 per cent. solution of eosin in absolute methyl alcohol. The other is a mixture of 8 parts methylene blue (Unna's polychrome) with 2 parts neutral glycerin. Both solutions are filtered and kept in wide mouthed bottles. The specimen fluid is allowed to dry on an object glass, protected from dust. A few drops of the eosin solution are poured on it, and after a few seconds the object glass is tilted so that all the excess fluid runs off. When quite dry, a small drop of the basic stain is deposited on the specimen with a glass stirrer. A cover glass is then placed over the specimen to spread the stain evenly over it. Any excess of fluid squeezed out can be dried off at the edges with blotting paper. By avoiding rinsing, the cellular elements in the specimen are left intact. He modifies the basic stain when the eosinophil granulations are to be shown up particularly, the formula then being 1 part of the methylene blue; 1 part of a 0.3 per cent. alcohol solution of marine blue to 2 parts glycerin. Specimens on the cover glasses can be collected and the stain applied at a leisure hour. The method is adapted for blood, for its parasites and for the cellular sediments of other organic fluids.

Semana Medica, Buenos Aires

1916, XXIII, No. 44, pp. 431-456

82 Vaccine Treatment of Pneumococcus Infections. (Estadistica y resultados obtenidos en el tratamiento de las neumococcicas por el Haptinogeno Neumo.) L. A. Garcia.—p. 431.

83 Forensic Case of Sclerosis in Patches. (Cerebro-esclerosis lagunar.) P. B. Aquino.—p. 436.

84 Importance of Base Hospitals. (La zona de etapas del punto de vista sanitario militar.) P. I. Acuña.—p. 438.

85 The Meat Supply. (Medios para producir carne higienica y abaratar su precio actual. Su trasporte a los grandes centros urbanos. Su conservacion.) J. G. Ruiz.—p. 442.

86 Etiology and Treatment of Tuberculosis. G. Escobar.—p. 446.

87 Care of the Teeth of Children in Asylums. (La terapeutica dentaria en los asilados.) E. Zawels.—p. 450.

Siglo Medico, Madrid

December 30, 1916, LXIII, No. 3290, pp. 833-848

88 *Sclerosis in Patches in Boy of Fifteen. (Esclerosis multiple juvenil.) G. R. Lafora.—p. 833.

89 *Croup Simulating Membranous Croup Due Exclusively to Bronchial-Pneumonic Process. (Relaciones entre el crup y la broncopneumonia en los niños.) E. Suñer y Ordonez.—p. 844. Commenced in No. 3289, p. 829.

88. **Juvenile Sclerosis in Patches.**—The first symptoms, pains in the legs, appeared early and by the age of 11 vision became impaired. Four years after this spastic paralysis developed, with headache and slight fever. Both arms and legs were totally paralyzed but the sphincters were apparently intact. The Wassermann reaction was positive and benefit was realized under mercurial treatment, but symptoms of sclerosis in patches, involving especially the medulla oblongata, became superposed on the clinical picture with convulsions and fatal aspiration pneumonia. No necropsy. There was no history of syphilis or neuropathies in the family.

89. **Relations between Croup and Pneumonia.**—Suñer describes a number of cases which show that an inflammatory process in the lower air passages may cause the symptoms of true croup. In one such case a child of 7 had a mild tracheitis but nothing to suggest diphtheria at the time or later. In the night the child seemed to be suffocating with diphtheric croup. Examination confirmed the absence of diphtheria but showed intense capillary bronchitis and the child soon died. Eight similar cases have been encountered since, all confirming the possibility of phenomena suggesting stenosis of the larynx but induced merely by bronchopneumonic processes. Intubation will show that the larynx is quite permeable after waiting a few moments to allow the reflex contraction from contact with the foreign body to subside. The larynx in these cases is not so red or inflamed

as in the usual cases of laryngitis, and reflex contraction of the larynx from local irritation seems scarcely likely. He explains the obstruction in the larynx by assuming that the bronchopneumonia, causing intense dyspnea, compels labored respiration with the consequence that there is at times a tendency to a vacuum in the lower air passages and rarefaction of air. This induces the entrance of air from without with greater velocity and under atmospheric pressure above that prevailing in the air passages. If the walls of the air passages are not strong enough to support this pressure, they may be forced together, thus actually closing the lumen more or less, and thus giving rise to the symptoms from organic stenosis. The fact that all his patients in this category were quite young, between 21 months and 6 years old, sustains the assumption that the tender walls of the larynx may be forced together by the pressure from the incoming air under higher pressure than ordinary. In the five cases that came to necropsy the larynx was found practically normal. He gives a number of physiologic tests and tests with rubber tubes, the results of which show the plausibility of this assumption as to the mechanism of nondiphtheric croup with severe derangement of the bronchial passages. The closure of the larynx under these conditions may be increased and facilitated by reflex contracture of the larynx under the influence of the irritation from the impact of the overpressure air, acting like a foreign body to induce reflex contracture. He calls attention to one case in particular in which a diphtheric pseudomembrane was found in one of the finer ramifications of the bronchi but nowhere else. This was evidently a primary diphtheric bronchopneumonia inducing croup although no pseudomembranes had formed in the air passages above this remote focus. Necropsy in the other cases showed the staphylococcus or streptococcus and pneumococcus as responsible for the trouble. Only in one case necropsy showed chronic interstitial laryngitis which may have cooperated or been alone responsible for the croup; it probably antedated the latter. Treatment should include that for the bronchopneumonia as well as relief from the stenosis of the larynx. For the former he commends physical measures as the most active at our command, with intubation to relieve the suffocation. No benefit was derived from diphtheria antitoxin in these bronchopneumonic croup cases.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

December 16, 1916, II, No. 25, pp. 2133-2200

90 *Selection of Professors for the Medical Department of Universities. (Een en ander over hooger onderwijs in de geneeskunde. VIII.) G. van Rijnberk.—p. 2133.
91 The Teaching of Pediatrics in the Netherlands. (Bijdrage tot de geschiedenis van het klinisch onderwijs in de Nederlanden.) E. C. van Leersum.—p. 2139.
92 Cases of Mycosis in Inguinal Region. (Epidermomycosis inguinalis, veroorzaakt door de Endomyces albicans.) D. Muijs. —p. 2150.
93 *Inherited Sclerosis in Patches. (Een geval van sclerosis multiplex hereditaria?) J. J. van Straaten.—p. 2156.

90. **Selection of Medical Teachers.**—Van Rijnberk emphasizes the extreme importance of selecting the medical professor as he is to serve as model and inspiration for thirty or more yearly classes of students, and his direct influence will extend over more than one generation. He discusses the properties and qualities that the man must have in order to offer some probability of availability, and ways and means for securing the right man for the vacancy.

93. **Inherited Sclerosis in Patches.**—Van Straaten describes the case of a woman of 33 with two little daughters of 8 and 10, all of whom present visual disturbances such as are typical of multiple sclerosis. For twelve years the mother has presented pronounced symptoms of multiple sclerosis; the first symptom was sudden decline in vision to 0.2/60. Some of the symptoms were comparatively transient and yielded place to others. The Wassermann reaction is negative. The oldest child has now atrophy of the optic nerve, and the course of the eye disturbances cannot be explained by any local or general affection other than multiple sclerosis. The other child sees everything green and yellow as she reads but no anatomic changes are perceptible in the eye or elsewhere.

Upsala Läkareförenings Förhandlingar

November 23, 1916, XXII, No. 1-2, pp. 1-140. Last indexed Dec. 16, 1916, p. 1884

94 *The Gastric Proteolytic Enzymes. (Om de proteolytiska enzymen i ventrikeln.) O. Hammarsten.—p. 1.
95 *Improved Methods for Examining for Color Blindness. (Förslag till ändrade bestämmelser vid undersökning rörande färgblindhet.) C. G. Poström, G. F. Göthlin and H. J. Ohrvall.—p. 23.
96 *The Blood Sugar Content in Case of Juvenile Myxedema. (Blodsockerbestämningar vid ett fall af infantilt myxödem.) N. O. Nilsson.—p. 107.
97 Auscultation Diagnosis of Cavity in Lung Tissue: "Paracavity Räles." (Ett bidrag till kaverndiagnostiken.) A. Wallgren. —p. 116.
98 *Influence of Kind of Infant Feeding on State of Nourishment and Development of Muscles in Late Childhood. (Om spädbarnsuppfödningens inflytande på utvecklingen af hull och muskler under uppväxtåldern.) K. Wedholm.—p. 129.

94. **The Proteolytic Enzymes of the Stomach.**—Hammarsten adds to his historical review of this subject an account of his own extensive research in this line. He calls attention to the great difference between the enzyme production in the stomach of the calf compared with that in dogs and other animals. Nothing elicited in his experiments seems to sustain the single rather than the dualistic theory in regard to the gastric enzymes.

95. **Tests for Color Blindness.**—The eighty-five pages of this monograph on color blindness discuss the present status of the question in Sweden, and this is compared with other lands, especially the tests for color blindness in vogue in Austria, England, France, Germany, Holland, Russia and the United States. The tests used in certain of their railroads and corporations are specified. The drawbacks of the various test methods are pointed out, and a method is described which promises to overcome all drawbacks. The main test is made with a chart on which are evenly scattered patches of color. The patches are of irregular outline, like a layer of tiny pebbles, showing the white background between them all. They are in three colors, a light and a dark reddish lavender and a dull cherry red. All the dull red patches are arranged in such a way that they form a large figure, 3 or 6, but as the red and the lighter lavender are of the same depth of tone, it would be impossible to distinguish the figures unless one was certain as to the difference in color between the red and the lavender. Two of the charts are reproduced in color, and the tentative work with other colors is described as one after the other various colors and tints were tested. None were found so instructive as the ones here adopted for these so-called pseudo-isochromatic tables. The figures on the charts are to be spoken aloud as read, and only from twenty to forty seconds are allowed for the reading of each chart. As the figure is read and named aloud, its outline is traced with a pointer. The feature of these charts is that the colors are all very much alike and two of them differ only in being a little lighter or darker. The advantages of a standard system for testing for color blindness are emphasized, and a model equipment for the purpose is described, with a general outline of the preferable procedure.

96. **The Blood Sugar Content in Myxedema.**—Nilsson's patient was a girl of 17. The sugar content of the blood was about 0.09 per cent. After ingestion of 100 gm. glucose, it ran up to 0.14 per cent. by the fifteenth minute after all the glucose had been taken in the course of forty-five minutes. After a course of thyroid treatment, the increase was higher in proportion and lasted much longer although there was no glycosuria. This diabetes-like curve in the sugar content of the blood, he ascribes to the thyroid treatment, as it harmonizes with what we know of the difference as to the tolerance for sugar with excessive and deficient thyroid functioning. The similar reaction to epinephrin was along the same lines but less pronounced.

98. **Influence of Infant Feeding on Development of Muscles Later.**—Wedholm's estimate was made from examination of 535 children known to have been breast fed and 279 raised entirely on the bottle. The children's ages ranged from 1 to 14 years. During the first two years of life the development of fat and muscle was less in the bottle fed, but from the third year on, no appreciable difference was apparent. Rachitis was evident in the proportion of sixty-nine among the 279 bottle children to seventeen in 535 breast fed.